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AIR FORCE **LOGISTICS**



**WOMEN IN  
THE MILITARY—  
*Changing Times***

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**COVER:**

(Background) Molly Pitcher took the place of her fallen husband during a battle in the American Revolution. (Foreground) A female pilot prepares to fly.

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# WOMEN IN THE MILITARY— YESTERDAY AND TODAY

*Women have been engaged in combat since the beginning of our country and have proven themselves to be capable and courageous warriors. The following section is dedicated to those women in the military and the Air Force who have served, and are serving, our nation in wartime and peacetime.*

## *Women in the US Armed Forces*

*Captain (Maj Sel) Kathleen Winters, USAF*

### *A Short History*

Since the Revolutionary War, America has always had a fighting force and women have always found a way to serve. (45:12; 47:34; 56:3) This service has taken many forms. Molly Pitcher and Deborah Sampson were the most noteworthy female fighters of the Revolutionary War. Both dressed as men in order to serve and fought on the front. History records show that Ms Sampson was decorated by General George Washington and granted a pension. (30:70; 32:5; 35:65) Women of that time who followed in the footsteps of these two women also dressed as men so they could be accepted into the fighting force. (26:23; 32:5)

Women served in all branches of the Armed Forces. Lucy Brewer, "the first girl marine," served valiantly in the War of 1812 on the *USS Constitution*. (32:5) Women were also counted in the forces of the North and South during the Civil War. Spying and nursing were the forte of those who served. The contribution made by women in these roles did not go unnoticed. (44:60) The outbreak of the Spanish-American War in 1898 prompted Congress, at the request of the Surgeon General, to allow the Army to contract for civilian nurses. These nurses remained in civilian status until the War's end, but the impact of their presence vastly affected the demographics of the Army's medical corps for future wars. (32:9)

The role of women in the military centered primarily around nursing until 1917. (30:73; 31:5) It was at this time

women were enlisted for work in support areas. The Navy and Marine Corps employed women as yeomen, radio operators, and administrative personnel. The Army continued to employ women as nurses only. (14:242) It was during World War I that the women were allowed a more active role in-service. The United States military needed auxiliary personnel in order to free able-bodied men to meet the expected fighting demands on the foreign fronts. (7:97; 21:33; 27:22) The influx of women into previously male defined and dominated positions such as typing and clerking was acceptable because of commercial business practice and success of hiring women for these jobs. As time passed, these

positions evolved into the sole domain of the services' women's auxiliary corps. (32:12) The role of women in the Armed Services changed during World War II. Women served in the medical field as well as support specialties such as supply, fuels, transportation, and administration. This expansion categorically gave women the opportunity to serve and respond in greater numbers to more challenging jobs under varied conditions. (32:50; 55:55) A prime example of this was the activation of female air transport crews. (56:16)



Women's roles in military service developed increasingly in the years following World War II. During the

Korean War and Vietnam Conflict, women continued to serve in medical and support fields. Approximately 10,000 women served in these two conflicts in the same capacity as their predecessors. (36:12) The conflicts of the last 10 years show women serving geographically closer to actual combat. For example, some of the Strategic

Airlift Command tankers supporting the fighter-bombers during the raid on Libya were piloted and crewed by females. The same holds true for the Military Airlift Command cargo aircraft landing in Grenada and Panama. (29:60; 31:5; 33:6) The Army forces deployed to Grenada and Panama contained women. The Army engaged

\* \* \* \* \*

### ***Combat and Combat Exclusion***

The Women's Armed Services Integration Act of 1948 (PL 625) set the stage for women in combat or, more specifically, for women to be excluded from combat. The law addressed many issues concerning women in the military. Highlights of the law are: it provided a permanent place for women in the Armed Services, capped the numbers of women allowed on active duty, designated the categories of jobs, specified the percent of female officer and enlisted personnel allowed in the active force, and excluded women from combat.

Each branch of service had its own title under the law which stated exactly what women's roles within the branch were. Women in the Air Force and the Navy were restricted to non-combat related duties. The Army, Coast Guard, and Marines had discretionary rights as to the placement of women in their branch. The Marines' ability to place women where they saw fit was hampered by the restrictions set upon the Navy. (24:83; 29:6-7)

Combat and combat exclusion were not really an issue until after the Vietnam Conflict. That is not to say that women were not in areas of combat or under fire until then. Women had served in Korea in the combat zone; indeed, there were six female POWs released from Bataan after World War II. (28:84; 30:78) Although combat medals were awarded to some women, in many cases women were not recognized for being in combat because to give credit was to admit women engaged in war fighting. (56:18)

Promotability was viewed as the primary consequence of combat. The gnawing question became "Can a woman rise in rank the same as her male counterpart with all things being equal except combat duty?" The crux of the question is "all things being equal." According to the civil rights and feminist movements, participation in

combat was the last frontier to full and total equality. (23:58)

In 1991, a House-Senate conference committee agreed to put a provision in the 1992-1993 National Defense Authorization Act repealing Section 8549 of Title 10 of the U.S. Code of Federal Regulations. The section prohibited women from serving as pilots or flight crew members on combat aircraft. Still in place is Section 6015, banning women from serving on combat vessels. (53)

### **Women in Combat: 1948-1960**

The two percent ceiling on the total number of women allowed in the Armed Services imposed by PL625 helped to keep women out of the firing line. Women worked in jobs similar to their civilian counterparts. Civilian employment for women targeted the areas of teaching, nursing, and clerking—these were the strict domain of women. (32:102; 48:63) Most jobs, professions, and tasks of this decade were gender oriented. This is not to say that other professions were not open or did not employ women, but rather, the concentration was usually on the aforementioned areas. Therefore, those women who chose the military as a profession or way of life were sometimes considered to be misfits. Electing to follow a typically male tradition versus a traditional feminine one brought forth commentaries and inferences such as the women must be oriented toward masculine or immoral behavior. (20:30; 32:72; 46:44)

In this era the attitude that women in the military really did not belong in combat was not an issue. The crux of the debate centered on women in the military and the appropriateness of that placement. The arguments on the subject addressed the areas of spiritual, physical, mental, and emotional fitness. (11:56; 20:31-32)

Spiritually, women were expected to be good and wholesome, morally

in combat at both places. It was noted that women fought alongside men in Panama in open fire fights. (1:12) During the recent Persian Gulf War, women were allowed to serve in such positions as helicopter pilots, aircraft maintainers, and munitions loaders, as well as in many other critical positions.

sound, chaste, wise, and supportive to the men in the family. (12:76) Qualities of peacefulness, serenity, and servitude did not exactly fit a female soldier or airman. Concerns over the physical demand of combat and military service were voiced by the legislators and implementors who questioned women's ability to literally carry their own weight. Mentally and emotionally women were viewed as children and attributed the qualities thereof. (9:3-4) Against this foundation of opinion, the issue of women in combat became a non-issue. In World War II women carved a niche for themselves. The Korean War itself did little to promote one way or the other the issue of women in the military, much less women in combat. (5:98)

The American public was not emotionally or physically prepared for the Korean War. It was trying to get back on its feet from World War II. The men were returning home to resume life as they knew it. Rosie the Riveter went back to her domestic haven. Polls indicated people wanted ranch style homes and Sunday afternoon barbecues, not another war. (13:89) Even in the midst of such attitudes, President Truman needed bodies, male and female, to go to war. He launched an unsuccessful campaign to increase the number of women in the military. Again, issues did not center around the exclusion of women from combat but whether women belonged in the military. (5:3; 14:89; 19:94) The Korean War indicated that each service had begun to depend on the support of women in order to achieve and maintain their mobilization plans. (32:157)

### **Women in Combat: 1961-1973**

From 1945 to the 1960s is referred to as the "doldrums" for women's issues. This view can be taken concerning women in the military from 1951-1966. Not much was happening legislatively. (43:6) Policy toward women in the



service was one of maintaining the status quo. The Vietnam Conflict caused dramatic change in this policy. Women in Vietnam served in various capacities but by far the predominant female force was in nursing. (37:11) Women were, and still are, viewed as non-combatants. Therefore, women serving anywhere in Vietnam were not considered to be in combat. Nevertheless, news coverage of the conflict did show women in areas where combat occurred but not as combatants. Let it suffice to say the issue of women in combat was nebulous at best, as combat was not legally (legislatively) defined until 1978. The gravity of this conflict in the face of the media was the morality of the war and what sort of individual would be involved in it. (10:15; 34:26) Media coverage of the American soldier during Vietnam was extremely unglamorous. (38:132; 39:210) Information concerning military women in Vietnam did not appear to be well recorded or deemed important. To date, the records vary as to how many women served in Vietnam. History does indicate that women did receive combat pay and medals for service in Southeast Asia (SEA). (37:15) Some also died there. But whether women could, would, or should fight was a matter discussed between commanders and in memos to personnel centers. (32:207) Women were not wanted in SEA in other than nursing positions. The reasons given appeared to be based on sexuality versus performance or task proficiency. (20:31) This was soon to change with the inception of the All-Volunteer Force

in 1973. It is at this juncture women were beginning to be seen differently.



### Women in Combat: 1973-1980

True to his campaign word, Richard M. Nixon ended the Vietnam Conflict and the draft. Thus began the need for an All-Volunteer Force. This action coupled with the movement towards the Equal Rights Amendment provided the impetus needed to give women more opportunities within the military. (2:16; 4:89; 6:10; 8:46; 15:75) Popular belief held strongly to the notion that no matter how liberated a nation we were or how equal we allowed women to be, America did not want her mothers, sisters, wives, aunts, or girlfriends walking off to war. Morality, physical strength, and mental aptitude along with many other concerns which addressed the fitness of women in the military and in the face of combat were postulated by members of Congress and others who opposed full integration of women into the Armed Services. (20:31) But even with high-powered opposition, the

wave of equality was being felt. Issues addressing equal treatment for married females, pregnancy, and dependents were brought up and legally questioned. Quite literally there was no way to turn back the tide of equality and the ensuing legislation. (32:274)

### Women in Combat: 1981-1991

During the Reagan administration, the focus for the military was defense via technology and rebuilding the American military image at home and abroad. (3:31; 17:3-4; 18:6; 25:1; 26:4; 41:12) Issues surrounding personnel concentrated on readiness and specifically just how ready we were. (8:55; 16:2-3; 17:10-11; 18:6; 22:2-5) With that thought in mind, just how do women contribute to the overall readiness of the military? (40:54-56; 42:22; 45:14; 49:21; 50; 51:35-48) During these 10 years, women's roles expanded greatly to meet the decline in male recruitment and also to meet the projected target strength of women in the military. (52:67-90; 54:55-56) Women were integrated into missile crew duty, most airframes, sea duty, and job specialties. As of April 1990, women in the Air Force were restricted from less than one percent of the job opportunities allowed men (AFR 35-60). Then, in 1991, the House Armed Services Committee, Congress, and the President signed into law an amendment to repeal the exclusion of women in the Air Force and Navy from being assigned to duty in aircraft engaged in combat missions. (53)

### FOR COMBAT EXCLUSION:

- Combat is a "man's job."
- Combat is unsuitable for women and women should be protected from it.
- The presence of women in combat would destroy a unit's effectiveness.
- Women are physically weaker and cannot maintain their end of defense.
- Presence of women in combat would signal to other nations that the United States is weak.

### AGAINST COMBAT EXCLUSION:

- Women have historically served in combat roles and performed them well.
- This is the last bastion of sexual discrimination to surrender.
- Women should be afforded equal opportunity in and to all jobs.
- Equality in citizenship - are only male citizens allowed to die for their country?
- Necessity; in order to fulfill our readiness requirements, we can no longer fight a war without women so train and prepare them. (20:30)



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Pages 1 through 4 were extracted from Captain (Maj Sel) Kathleen Winters' AFIT Thesis, "USAF Women in Combat Policy and Implementation in the All-Volunteer Force." Captain Winters is presently Commander, 92 Transportation Squadron, Fairchild AFB, Washington. She is the only female Squadron Commander on the base.



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# *The Logistical Challenges of Integrating Women Into the Military*

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*Captain Lois J. Schloz, USAF*

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## **Introduction**

After lengthy debate in and out of the legislative branch of the United States government, the Women's Army Auxiliary Corps (WAAC) and the Women Accepted for Voluntary Emergency Service (WAVES) were established in 1942. These organizations were soon followed by the Women of the Marines and the Coast Guard Auxiliary, SPARS (Semper Paratus—Always Ready). The enlisted women and female officers served in their respective services throughout the United States and around the world.

Since the military was built around the assumption that we would always have an all-male force, several problems were evident early in the effort to integrate women into the military. In this paper we will see some of the logistical nightmares encountered and how they were solved.

## **Logistics Problems**

Many things currently taken for granted by female military members presented major logistical problems to the early pioneers. Such things as uniforms, billeting arrangements, and medical care have become commonplace in today's military. That was not always the case.

## **Background**

Because public opinion on a "woman's place" did not keep up with her economic progress, she knew there would be public opposition to women performing soldiers' jobs and being placed in positions of command. The obstacles against women in the military were many, but were not fully realized until the establishment of a women's corps. (8:5) In 1901, Congress established the Army Nurse Corps, which was essentially a military organization without benefit of rank, officer status, equal pay, or a retirement plan. This was, however, a large step toward the admission of women to "full membership in the armed forces." (8:6)

In May 1941, a bill was introduced by Congresswoman Edith Nourse Rogers in the House of Representatives to establish a women's auxiliary to the Army. This bill soon sank from sight; it was a full year before it became a law. (8:18-20) During this time the Army devised a plan for the integration of women, feeling the situation was sure to be forced upon them. The Army's plan for a women's corps provided for a Women's Army Auxiliary Force (WAAF), "definitely a civilian auxiliary and not part of the Army." (8:17)

The Rogers bill was approved by the Senate on 14 May 1942 and signed by the President on 15 May. This bill became Public Law 554, an Act to Establish a Women's Army Auxiliary Corps for Service with the Army of the United States. (8:45) The WAVES (Women Accepted for Voluntary Emergency Service), the female arm of the Navy, was established in December 1942. The WAAC became the WAC (Women's Army Corps) and became part of the Army on 1 July 1943. (8:221) The WAC at its peak strength was 100,000 women strong. (8:ix)

## **Billeting**

Providing housing for groups of women was not a tasking the military had faced before. Mrs Oveta Culp Hobby, WAAC director, proposed that WAACs have dormitories with two persons per room, since women were not accustomed to living in groups. She was quickly turned down on this point on the grounds of economy and feasibility. (8:41) Plans to modify existing facilities were already underway.

While the men spent very little time in the barracks except to sleep, the women's dormitories were their homes. It was the one place where women could relax out of the public view. Since single women out "on the town" on their own were frowned upon, and there was little entertainment available, the women spent a great deal more time in the barracks than did the men. (4:70)

For the WAC, the women lived in something resembling the peacetime Army barracks, although some divisions into smaller "rooms" appeared due to differing shifts and schedules. (8:520) The Navy, on the other hand, provided two- and four-woman rooms similar to dormitories used in the civilian sector, as they recognized the permanent nature of WAVES employment. (8:520)

There were two types of modifications necessary to convert existing Army barracks for female use: safety and segregation from men, and adaptation of plumbing and similar facilities. In fact, WAC barracks were required to be at least 150 feet from men's barracks, or have an intervening structure. (8:515)

In the early days, camp commanders had little idea how to prepare for arriving WAACs. To minimize difficulties, WAAC command directors were given explicit directions on "How to Visit the Field." The directions included visiting the post engineer to verify safety and proper construction of WAAC barracks, visiting the Quartermaster to ensure WAAC uniform items would be made available, and visiting the post surgeon to arrange separate sick call and medical wards for the women. (8:90)



## **Medical**

Medical care for women was not a customary service offered at military hospitals and dispensaries, particularly in the field. Army regulations required a monthly physical for all soldiers

which included an inspection of the feet, mouth, and teeth, as well as investigation for venereal disease, vermin infestation, and chronic diseases. No indication whether this applied to the WAAC was given to the field; therefore, it was assumed to be not applicable. The Surgeon General refused to set a policy, leaving the decision to each individual unit. (8:608)

Another problem in the dispensaries and hospitals dealt with the necessary segregation of women. This was easily accomplished in larger hospitals but was difficult in smaller units. In many cases, because of the small numbers of women involved, types of cases were not always segregated in the medically customary manner. (8:610)

The Surgeon General's Office had an active program for combating venereal disease for women, which was based upon the belief in different moral standards for women. (8:615) Despite public opinion that female military members were loose, the WAC pregnancy rate was consistently lower than that of the civilian women in comparable age groups, as was the rate of venereal disease. The total pregnancy rate varied from 0 to 7 per 1,000 for WACs, considerably less than the civilian rate of 117 per 1,000. (8:620)

The higher moral standards required by women to be members of the corps are illustrated in this story: In an interview with Joan Campbell, a member of the WAC from April 1943 until September 1945, Eleanor Stoddard quotes Campbell's story of a WAC who was considered a "very active whore." It was known to Campbell that this woman had venereal disease, and that the corps was trying very hard to discharge her. "They did not want to discharge her for being a whore because that would look bad for the WACs." It turned out that the girl was underage, so they were able to discharge her without hurting the image of the WAC. (7:143-144) For a member of the WAAC, it was grounds for discharge to be charged with "conduct bringing discredit upon the Corps." (4:69) The men of the Army had no comparable punishment for such conduct.

## Recruiting

WAC recruiters found the location and nature of Army recruiting stations a major problem in recruiting women. (7:56) Often they were located in basements and in close proximity to the men's latrines. Not only was the appearance of recruiting stations seen as a problem, but the inept "sales" methods used by the recruiters were also suspect. The WAAC director authorized an impartial survey conducted by an impartial civilian agency. The results were horrendous! Some of the agency's women sat for over 30 minutes without attention from a recruiter, and many were told, "Take (this pamphlet) home and when you make up your mind, come back." (8:179)

As a result of low recruitment rates, standards were dropped dangerously low. Director Hobby's first act upon taking control of recruiting was to restore the minimum enrollment standards. Although recruiting numbers continued to fall, Mrs Hobby felt the WAAC was recruiting a higher standard of women. (8:183)

Early on, there was a basic policy of Corps democracy stating that all officers were to be graduates of the Officer Candidate School and not direct appointees. (8:34) This policy was not broken, or even bent, even in the face of many influential people attempting to obtain favors for friends and relatives. This also added to low recruitment rates. The Navy, however, made an early decision to set realistic recruiting goals and to stick with them. The goals were 75,000 enlisted women and 12,000 officers, and were easily met. (4:32)

## Uniforms

The WAAC director had only an advisory position when it came to the design of uniforms. The Army contracted with the men's clothing industry to design and produce the women's uniforms, as they did not wish to pay what the female clothing industry would charge. The designs resulted in ill-fitting, masculine appearing uniforms, the skirts of which rarely matched the jackets. (4:40-41) The director of the WAAC desired the women to wear skirts as much as possible, to avoid the masculine appearance of wearing slacks. (8:38) When the WAACs were still in the planning stages, the problem of clothing only 12,000 WAACs was anticipated to create "no unusual difficulties" according to the Quartermaster General. (8:36) However, as it turned out, one of the biggest supply problems facing the WAAC was the inability to issue even one complete set of uniform items to recruits; male draftees rarely encountered this problem. (8:149) Jeanne Holm recalls:

The Navy avoided the Army's problems by going to a well-known women's fashion designer . . . for the original design and then contracting with the women's fashion industry to make the uniforms. (4:41)

The original uniform, with minor modifications, survives to this day. (4:42) The Navy also avoided distribution and procurement problems faced by the Army by contracting with several department stores to do the final fitting and issuing of uniforms. (4:42) The WAVES, SPARS, and Women Marines authorized dress uniforms for both officers and enlisted women to wear during off-duty times, while Army and Navy nurses had dress uniforms as well as both a summer and winter off-duty dress. (8:528) The WAAC/WAC had nothing similar.

## Jobs Held By Women

When planning by the Army resumed for a women's corps, the plan stated that "women's probable jobs would include those of 'hostesses, librarians, canteen clerks, cooks and waitresses, chauffeurs, messengers, and strolling minstrels.'" (8:15)





Eventually the planners' thinking changed drastically when it was decided that in a modern Army, possibly half of all "soldiers'" jobs were appropriate for women. (8:95) To avoid wasting time for training, only skilled women were sought by Army units in the field. (8:42)

In the Army Air Forces, women were not as limited to the types of jobs held. Although many held conventional clerical jobs such as typists and stenographers, women also filled technical assignments. These jobs included such diverse positions as weather observers, radio operators and cryptographers, control tower operators, business machine operators, and mechanics. (8:289-293) And they performed well, as this story illustrates:

... The Luftwaffe launched its initial bombing attacks on British fighter airfields and radar stations in the south-east of England ... some of the radar stations were put out of action for several hours. The one at Ventnor in the Isle of Wight was put completely out of action, but this fact was concealed from the Germans by signals from another transmitter ... tribute is due to the women radar plotters of the WAAF, the Women's Auxiliary Air Force, who went on reporting raids until their own station was bombed. (3:99)

### Remaining Issues

Today, these logistical problems no longer exist. Virtually every military installation has facilities, medical services, and uniform items available for the female military members. The one remaining issue is that of women in combat. The WAAC was designed to be a corps of 25,000 women for noncombatant service; it was "not a part of the Army but it shall be the only women's organization authorized to serve with the Army, exclusive of the Army Nurse Corps." (8:19) The chances of a nurse being captured or wounded were not seen as extraordinarily high and certainly not high enough to rouse the disapproval of the United States Congress or the public. (3:223)

In some locations, however, Army nurses were in combat action when their hospital units were overrun or became part of the front line through changes in the battlezone. Some became prisoners of war; such was the case in the Philippines in 1942. Nurses, as prisoners of war, continued to serve the troops as best they could for three-and-a-half years. There were 81 of these women. (6:60)

In 1982, Nancy Goldman said, "Women have been effectively utilized in combat during revolutionary settings when the society is undergoing fundamental social and political changes." (1:5) However, the use of women in combat during the last two centuries has not been extensive. (1:5) She also stated, "There has been no substantial participation of females in the American armed forces in the past, and there has been next to no participation in combat." (1:218)

It would seem, then, that the combatant question is not one easily answered. It is, however, the last remaining boundary to be crossed in order for women to be full members of the military.

This boundary was indeed crossed during Desert Shield/Storm in the recent Gulf War. Women served in such combat positions as helicopter pilots, aircraft maintainers, and munitions loaders, to name but a few. The House Armed Services Committee, Congress, and the President recently repealed the law banning

women in the Air Force and Navy from being assigned to duty in aircraft engaged in combat missions. (2;5:41) This action was partially due to the exemplary manner in which women served during the Gulf War.



### Summary

It is evident women have played an important role in the United States military. Many logistical problems have been surmounted and many prejudices encountered and overcome for women to have reached their current status. Women helped win the Second World War and the Gulf War both by freeing men to perform combat duties and performing combat-related duties of their own. In addition, women continue to defend the United States and its allies on a daily basis around the globe. It has been a hard-won victory—a victory which was made no less sweet by the omnipresent question of whether women should be "allowed" in combat. Now that the barrier has finally been crossed, women can be considered full members of the military. This is a major breakthrough, which took women only 50 years to obtain by continually "proving" themselves.

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Captain Schloz wrote this paper while an AFIT student and is presently assigned to the Directorate of Maintenance and Munitions, Air Force Logistics Management Center, Maxwell AFB, Gunter Annex, Alabama.



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*The following is an account of Major Wolford's experiences in Sicily, Italy, during the Gulf War. She was the only woman on the deployment and was required to fill many different types of positions.*

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## ***Becoming a Well-Rounded Logistician During the Gulf War***

***Major Bethany R. Wolford, USAF***

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*"Running an enroute support location during the Gulf War was probably not as exciting as actually serving in the area of responsibility (AOR), but it was quite a logistics challenge."*

USAFE had enroute support teams at Zaragoza and Moron Air Bases in Spain, Lajes Field in the Azores, and Naval Air Station Sigonella in Sicily. They designed the units to support all USAFE and TAC fighter aircraft transiting Europe, the States, and the AOR during all phases of the Gulf War. They were used as overnight stays for aircraft where crew rest mandated a stopover, for gas stops when tankers were not available, and as emergency locations for fighters with problems.

Generating these support teams was a small part of Joint Operation Planning and the Deliberate Planning Process. As many of us studied, there are two methods of planning in the Joint Operation Planning System (JOPS). Deliberate or Peacetime Planning takes many months. Time-Sensitive or Crisis Action Planning is accomplished in a few days. Both methods follow the same steps. The JCS publications detailing the Planning Process teach us the steps and procedures in a complex, consecutive order. In Crisis Action Planning, the steps are followed; but the sequence of events is compressed or duplicated, or the order changed somewhat to respond to changing needs. Nevertheless, we followed the steps—and they worked.

For our small piece of the picture, in establishing the USAFE Enroute Support Units, we followed the Planning Process from the time a task was assigned to implementation of the plan. In our case CENTAF REAR tasked USAFE to provide the teams.

USAFE activated their Logistics Readiness Center (LRC) in August 1990 to support the conflict. The LRC operated round-the-clock during the majority of the conflict and was composed of USAFE/LG staff members from these logistics disciplines: maintenance and munitions, supply, transportation, and plans.

When CENTAF REAR had a requirement for an enroute support team, they provided USAFE with Air Tasking Orders (ATOs), number of aircraft, timing, and information on any support packages traveling with the aircraft. The LRC would in turn plan the enroute support team. They built a force list, line by line, including number of personnel and AFSCs, support equipment (including size and weight), and required movement dates. They then tasked their Numbered Air Forces to fill the requirements. Coordination was required with CENTAF Forward to prioritize the requirements. Information on all required movements was entered into the Time-Phased Force and Deployment Data (TPFDD) file, containing a description and routing and cargo movement characteristics of forces defined for a specific plan, as well as movement requirements for cargo and supplies. Once the requirements were in the TPFDD, transportation was arranged. The Transportation (LGT) personnel in the LRC worked with CENTAF and coordinated in-theater airlift.

The system worked as advertised to establish requirements for Enroute Support Units, build the required package, task appropriate units to fill the requirements, establish airlift requirements, and move the personnel and equipment. Now the creative part comes into play—actually managing one of these units once it is in place.

My role in the war was as the Deputy Commander for Maintenance (DCM) of the Enroute Support Unit at Naval Air Station Sigonella in Sicily. Our unit was in place from 17 January to 10 June 1991. It was initially established for transiting USAFE fighters going to the AOR and later grew to cover all A-10s and EF/F-111s returning from the AOR to Europe and CONUS. When Provide Comfort went into effect, we were the stopover for all fighter aircraft in and out of Turkey. Additionally, we were the emergency divert spot for any fighter aircraft in and out of the AOR, and the gas stop for all fighters without tanker support.

During our average operation, we had 30 to 40 people, but grew to 80 when squadrons of A-10s came through our area. These people came from nine different USAFE bases. Most of the time I was the only officer present with a MSgt as NCOIC. The remainder of personnel were TSgts and below. When the A-10 people were present, they brought a Captain and some more senior NCOs. I was also the only woman on the deployment.

Most everyone in the unit had been on some type of deployment before, but most of them were to other US Air Force bases/facilities or to join up with other US Air Force units already in place. Sigonella is an Italian Air Force Base with an American Navy unit attached. So we quickly learned the Navy way of doing business, as well as befriending the Italians for assistance when needed.

The first thing we learned was the Navy's organizational structure (and relearned all the Navy ranks we forgot from school). Once we knew who was responsible for what, we could start to get things done. We developed an Entry Authorization List (EAL) for the security police to use in conjunction with our home station line badges. We needed a local flight-line driving course for authorization to drive on the flight line. We had some military vehicles and some rental vehicles, so we needed flight-line passes authorizing them on the line. We learned the local system for coordination for petroleum, oil and lubricants (POL) support and use of the hot pits. We needed training records to show our proficiency for use of various pieces of support equipment. The Navy gave us a flight shack on the flight line, our own little piece of the ramp, and a radio—and we were off and running.

Our work schedule was extremely sporadic. As mentioned earlier, we launched and recovered aircraft coming and going from all over Europe, the AOR, and Turkey. We received our aircraft schedule primarily from the USAFE LRC via telephone. We had access to two STU IIIs on the base, located away from the flight line. The telephone system on the base was terrible.

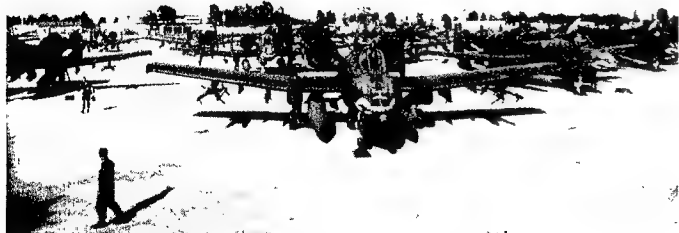
We left the flight line and spent literally hours trying to get through to USAFE or other locations on the STU to get the schedule of events every day. We received other aircraft inputs through ATO messages and occasionally received phone calls from bases launching the aircraft. Many of our aircraft arrived without notice.

In addition to needing to know about all aircraft planning to land at Sigonella, we also needed to know about any fighters transiting overhead since we were the emergency divert base. We needed to stay available 24 hours a day for any type of fighter aircraft. We had AFSCs to cover all types of fighters (except F-117s), but some were extremely scarce. To provide this type of coverage with our uncertain schedule, it was a few months into the deployment before we could start scheduling anyone for days off and develop a viable weekend duty schedule. Even then, we did have some aircraft slip through the cracks. Base Operations called our hotel (a 45-minute drive from the base), late one sunny Sunday afternoon while everyone was out sunbathing, and told us the Navy guys threw some chocks under a couple F-15Es that came in broke and were waiting on us to come take care of them and the aircrews.

We were busy when aircraft started returning home from the AOR. But when everything was put on hold, morale problems set in. We didn't touch an aircraft for two weeks. Day to day we didn't know when things would start up again, or if we would have any aircraft at all coming through, so coverage for all types of aircraft reported in every day. By this time everyone had been TDY for almost two months, and several wanted to go home. Coming to work every day and no aircraft showing up was starting to get to them. If we knew there was nothing coming in and could let them take some time off for sightseeing, etc., their attitude would be much better. These were the longest two weeks of the five-month deployment.

After aircraft started returning home again, we became extremely busy. Up to this point, there were small numbers (four or five) of aircraft per day. In mid-March entire squadrons of F-111s and A-10s started coming through, along with the small numbers of odds and ends of different types of aircraft. We recovered and then launched 12 F-111s at a time, three different times. A major hurdle we crossed with the 111s was only *one*—60 were available on the base! We ended up cart starting over 60 F and EF-111s! But not before we had detailed discussions explaining the procedure with the Italian fire trucks standing by every day. The aircrews and crew chiefs seemed to quite enjoy this exciting change of pace.

In addition to our many maintenance challenges on this deployment, we became total logisticians. I became the DCM, Resource Manager (RM), and Base Commander all rolled into one. Occupying space on an Italian Air Force/American Navy base, we were on our own for much of the normal base support we expect at an Air Force base.



Entire Squadrons of A-10s RONing.

In the logistics arena we confronted a myriad of transportation tasks/problems. Our first challenge was procuring vehicles. The only other Air Force installation on Sicily, Comiso AB, a couple hours' drive away, was a great help. With Comiso closing down, they loaned us a number of government vehicles awaiting turn-in to salvage. As you can imagine, the condition of these vehicles was not optimum; but they were better than nothing. We borrowed a number of vans for shuttling people back and forth from the hotel to the base and some utility vehicles for the flight line. We discovered our USAREUR driver's licenses were not good in Sicily, nor our international driver's licenses if we were TDY military. To drive off base, each person attended a four-hour class to receive a local Sicilian driver's license.

In addition to the vehicle side of transportation, we also worked the airlift side. We learned the system of what military flights were normally available out of Sigonella and how to find out about unscheduled flights for moving people and cargo. After the first 90 days, I was able to rotate some people out, on a voluntary basis from their home stations, because I could find military transportation available to swap the people out, at a minimal cost to Uncle Sam. In some emergency situations we did resort to commercial airline tickets in and out, but these were extremely expensive. We also closely monitored the military flights available in and out to move cargo, equipment, and parts.

As a supply officer I didn't have too many headaches, because parts and supplies simply weren't available at our location. Since our unit was assembled to cover all types of fighter aircraft, only minimal parts/supplies were brought along for a few aircraft (F-16 tires, etc.). When we needed parts, research was done with the home station for the aircraft, if a USAFE asset, or with a USAFE base with like aircraft for CONUS aircraft, to determine exact parts requirements. We passed our requirements to the LRC who then tasked a base to provide the part for us. The LRC folks monitored the airlift situation from their end to get the part to us. Occasionally, we could work something out with the Navy for transportation from our end. Unfortunately, our priority on the airlift schedule was pretty far down the totem pole, so at times aircraft sat for days awaiting parts. Luckily, aircraft didn't break very often.

Further into the logistics arena, I worked as a contracting officer, procuring long-term contracts for rental vehicles and efficiency apartments. Comiso and Sigonella personnel advised us to keep a low profile while off base, due to terrorist activities. We could not wear uniforms or drive government vehicles. We had two nine-passenger olive drab military vans we still used for transportation from the hotel to the base, but we could not drive the other obvious camouflaged military vehicles off base. I negotiated for monthly contracts on rental vans for additional off-base transportation. We could receive better rates for long-term rentals, but we never knew from month to month how long we would remain in operation.

I encountered the same difficulties negotiating for our billeting. Our billeting was nonavailability at an off-base hotel, and we never knew from month to month, or even week to week towards the end, how long we would remain. So negotiating rental agreements was difficult.

I worked in the last logistics discipline as a logistics plans guy, planning and working all our people and cargo requirements and movements, and then went on to include a number of other specialties in my work. My biggest headaches probably came from trying to be a services officer with billeting and chow problems.

There was no billeting available on the base for us or for any of our aircrews our entire time at Sigonella. The base gym was set up with over 100 cots for short-term stops of a few days. The

base was overcrowded because of the war and, in the latter half of our deployment, we ran into springtime tourist season in Sicily and off-base hotel rooms were scarce. We went nonavailability for our billeting and were on our own to find a place. We needed a place to hold us all (at least the smaller crew of 30 - 40 people) for ease in transportation and recalls. The only place we could find with room for everyone, and still fit within the billeting allowance of our per diem, was a 45-minute drive through the worst traffic (yes, worse than Paris or New York!).

For the first month, we stayed in hotel rooms, with two people per small, stark room. Now I shouldn't sound like I'm complaining since we weren't sleeping in the gym or in tents like the guys in the Desert. But this rather basic hotel didn't have any heat or air conditioning turned on during our entire stay. In January it was still COLD at night in Sicily, and we slept in our long johns for the first two weeks. By May it was quite hot at night with no air conditioning.

Most of my services job was ensuring everyone was fed properly. We had a chow hall and a Wendy's on the base where we could eat breakfast and lunch, but dinner was a problem. The restaurants in the area around our hotel didn't open for dinner until 2100 hours, and as with many European restaurants, it was well over an hour by the time one left the restaurant. We got up at 0400 to beat the traffic and make it to work in time for our first expected arrivals. So we either went to work tired, or we went without dinner.

After a month in the hotel, I was able to negotiate a deal for most of us to move into some small efficiency apartments connected to the hotel, two- and three-bedroom places with one bathroom and a tiny kitchenette. We put from three to six people in each apartment. With the little kitchens we could buy groceries and make our own dinner. Three to six people using one shower made for a hectic schedule in the morning, and we ran out of toilet paper a lot. After working out the expected roommate problems from such cramped quarters, the apartments worked out much better than the hotel rooms because of the little refrigerators and stoves.

In addition to managing billeting and meals for all our maintenance guys, we also took care of the aircrews. Many times we didn't know how many aircraft were coming in or how many folks were spending the night, so advance planning for billeting was impossible. No one in our group spoke Italian and not many people in the hotels spoke English. Some of us spoke German and Spanish and that would work at times. But finding hotels for the aircrews was extremely difficult as we got into spring tourist season. Once we contacted a place with openings, we had to find it and then get our people there. Our biggest headaches came when 20 A-10s at a time would come in to remain overnight (RON) in addition to a half dozen other assorted aircraft. Finding

hotel space for groups of this many people, on short notice, since their departure schedules kept changing, was next to impossible. But somehow, we managed to make room. A few times we brought two or three pilots back to the apartments to sleep on someone's couch (I don't know how they filed this on their travel vouchers!).

Our transportation friends at Comiso loaned us a bus so we could take large groups of people downtown. But we didn't have anyone with a bus driver license, so we sent a couple guys through half a day's training for qualification. We also ordered and delivered box lunches to all the aircrews for long trips.

We took on many other odds and ends of jobs, normally done by some other base support function. We worked as finance officers and learned the Navy finance system, to get large amounts of TDY pay for all our people every month (yes we got hefty per diem, to pay for hotels and meals—quite expensive in Sicily).

We also became IM specialists to send out messages and do orders and amendments to orders. We needed many amendments, since most of our orders were cut for much less time than we ended up staying at Sigonella. Some of the people on the first contingent to arrive were told to go for a max of four days just to fix a broken jet. Then when the enroute support team was planned, their home stations elected they remain as part of the team. Some people arrived with one uniform and a carry-on with a shaving kit as their only luggage. These folks ended up staying for three months. Eventually we got more things shipped to them in travel pods. I was told on a Friday afternoon I would depart on Monday for three months. I ended up wiring money back to Germany to pay two more months of rent while I was gone.

The last major job I filled while running this enroute support team was as the commander/first sergeant. As you can imagine with people away from home this long, we saw the usual problems with spouses back home. Luckily we didn't receive any Red Cross messages, but we did end up sending some people home for family problems.

We encountered a few morale problems, especially as I mentioned earlier, when guys weren't working for a long period and wanted to go home. We also had a few drinking problems during this time. We gave a number of verbal counselings, but I only gave two letters of reprimand during the entire deployment.

We performed many different jobs on this deployment, not normally required of maintenance personnel—but it was a fantastic learning experience. It also showed just how versatile logisticians are. We provided a great service to the war effort, and with the minimum manning and support we had, we didn't take anything away from the people and support needed in the AOR.

*Major Wolford is presently Commander, 52 CRS, Spangdahlem AB, Germany.*



Local poultry market.



Trying to read a map while sightseeing.



## *Changing Times for Women in the Military*

*Several enlisted personnel and officers assigned to the Air Force Logistics Management Center at Maxwell AFB, Gunter Annex, Alabama, were given the opportunity to express themselves candidly about their careers in the Air Force. We think you will find these informal remarks very enlightening.*

**NAME AND RANK:** CMSgt (Sel) Rosemary Johnston

**LENGTH OF SERVICE:** 15 years

**PRESENT ASSIGNMENT:**

Superintendent, Stockage Policy Division,  
Supply Directorate

**PREVIOUS ASSIGNMENTS:**

Supply Procedures Superintendent, Ramstein AB, Germany  
NCOIC, Procedures Unit, Incirlik, Turkey  
NCOIC, Analysis Section, George AFB, California  
Inventory Management Supervisor, Langley AFB, Virginia  
Inventory Management Specialist, George AFB, California



*"There are few other jobs in the civilian sector that can compare with a career in the military."*

**ADVANTAGES OF BEING SERVICE MEMBER:** There are few other jobs in the civilian sector that can compare with a career in the military. I was given the opportunity for increased responsibility at a very early age. Likewise, I was allowed to experience the diverse tasks associated with my career field. Coupled with that is the ability to travel across the United States and overseas. Additionally, I had a clear-cut career path which I, to a large degree, could control. I knew what goals I needed to accomplish for promotion and was provided the opportunity to meet those objectives.

**DISADVANTAGES OF BEING SERVICE MEMBER:** The biggest disadvantage is the sacrifices my family made because of my career. Time spent away for temporary duty, long hours, and constant moves have all had impacts on my husband and children. Our society expects husbands/fathers to work long hours and be away from home, but still has not fully accepted the fact that a lot of women work outside the home, go away on business trips, etc., and are not always available when the family needs them.

**ARE YOU GLAD YOU JOINED THE SERVICE?** Yes. I look at all that I have achieved relative to those things accomplished by the folks I graduated from high school with and I realize that the military was the right decision for me.

**WOULD YOU RECOMMEND IT TO OTHERS?** Yes, providing they realize that the military does require total dedication. You have to put a lot of things on hold such as school, personal commitments, etc., to fulfill your military obligations, and not all folks are ready to make the adjustments necessary for a military career.

**SHOULD WOMEN BE ASSIGNED COMBAT ROLES?** Women should be allowed to pursue all the possibilities offered by their chosen or designated career field. If combat is one of the possibilities, then women should be allowed to serve next to their male counterparts.

**WHAT WOULD YOU CHANGE ABOUT THE SERVICE?**

- Put more women, enlisted and officers, in leadership positions.
- Put an enlisted female on the Uniform Board and on the Defense Advisory Committee on Women in the Service (DACOWITS).

**FUTURE PLANS:** My short-term goals are to finish my undergraduate degree and become a chief enlisted manager at either base or command level. My long-term goals are to pursue a graduate degree and serve as a senior enlisted advisor.

**NAME AND RANK:** Major Martha A. Herron

**LENGTH OF SERVICE:** 13 years

**PRESENT ASSIGNMENT:**

Executive Officer

**PREVIOUS ASSIGNMENTS:**

**Officer:**

Chief, Base Information Management, RAF Mildenhall,  
United Kingdom

Director, Mission Support, Sembach AB, Germany

Squadron Section Commander, Sembach AB, Germany

Executive Officer, Andrews AFB, Maryland

Acting Chief, Admin Comm and Pubs Mgt Analyst, Andrews AFB,  
Maryland

**Enlisted:**

Scientific Research Assistant, Human Resources Laboratory,  
Brooks AFB, Texas



*"Being single, it gives me a tremendous amount of pride to be a member of the armed forces."*

**ADVANTAGES OF BEING SERVICE MEMBER:**

- Top advantage is job security. Along with that goes retirement and health benefits.
- Being single, it gives me a tremendous amount of pride to be a member of the armed forces. The service has given me the opportunity to take care of myself. I like being independent and not having to rely on others. I make my own money and I like to spend it as I please.
- Overseas assignments gave me the opportunity to experience how people of other countries live. There were a great many advantages—travel, sightseeing, buying expensive foreign made articles more cheaply, and delicious food and wine.

**DISADVANTAGES OF BEING SERVICE MEMBER:**

- Separation from family members and relatives is undoubtedly the greatest disadvantage of being a service member. Being stationed overseas can intensify one's loneliness. Being single, I often wished family members were near to give me support while I dealt with the many stresses of adjusting to a foreign environment, culture shock, and bad days at work. In England, I was fortunate to be on a base that had several female officers. It was great to talk with women who were experiencing the same problems. In Germany, I was not so lucky. There were few female officers.
- Overseas, there was also a real terrorism threat. The bases would regularly perform 3- to 4-day chemical warfare exercises with individuals working 12-hour shifts. Wearing the chemical warfare suit and gas mask was unbearable at times. I would go home absolutely beat!

**ARE YOU GLAD YOU JOINED THE SERVICE?** Yes!

**WOULD YOU RECOMMEND IT TO OTHERS?** Yes!

**SHOULD WOMEN BE ASSIGNED TO COMBAT ROLES?** I believe that women should be given the opportunity to choose whatever career field they desire. If their career field includes the possibility of placing them in the combat role, then they must be willing to accept that role. The armed services should ensure female service members are trained to defend themselves if they are assigned to countries where threats of terrorism are daily possibilities. Even though my Air Force Specialty Code (70XX) is classified as a support career field, I was placed in a foreign country where threat and terrorism were possibilities. While overseas, I had to participate in chemical warfare exercises just as my male counterparts. In England, my role during the exercises was Alternate Survival Recovery Center Commander. If war had broken out, according to the Noncombatant Evacuation Operations Plan, I would have been sent home to the States after women and children dependents. I often wondered why women service members were given, what I considered to be combat training, if we were to be excluded from participating in combat if actual war broke out while we were overseas.

**WHAT WOULD YOU CHANGE ABOUT THE SERVICE?** I don't like what is happening in today's Air Force. Quality Air Force members are not allowed to do service for their country. Fear of a Reduction in Force (RIF) has motivated many quality Air Force members to volunteer for the voluntary separation incentive/special separation bonus (VSI/SSB) programs. I think the Air Force should have found a way to identify/separate poor performers before offering VSI/SSB to Air Force members and holding a RIF board. A military member who produces high-quality work and stays out of trouble should at least be allowed to remain in the service until retirement, without fear of being forced out.

**FUTURE PLANS:** I have enrolled in the Air Command and Staff College (ACSC) seminar, which will begin in August 92. I want to stay with the Air Force and would like to attain the rank of Lieutenant Colonel before I retire. My goal is to become a CBPO Mission Support Squadron Commander.

**NAME AND RANK:** SSgt Beverly Warner

**LENGTH OF SERVICE:** 13 years

**PRESENT ASSIGNMENT:**

NCOIC, Transportation and Contracting Administration

**PREVIOUS ASSIGNMENTS:**

501st SPG, United Kingdom, England

323 Transportation, Admin, Mather AFB, California

Food Service Admin, Duluth, Minnesota

**ADVANTAGES OF BEING SERVICE MEMBER:** My children and I have had the opportunity to see and do exciting things in other countries and to make many friends with people from other cultures. The service has given me the chance to go to school because most bases offered Saturday classes and early and late classes to accommodate the swing shift worker. Also, I have saved a lot of money because of the medical benefits extended to me and my family.

**DISADVANTAGES OF BEING SERVICE MEMBER:** As a single parent, I find it very hard to find a reliable person to watch my child when I go TDY. Also, I am always afraid I will get a remote tour and have no one to leave my child with while I am away. It has always been difficult to file the dependent care and responsibility form when I go TDY overseas.

**ARE YOU GLAD YOU JOINED THE SERVICE?** Yes.

**WOULD YOU RECOMMEND IT TO OTHERS?** Yes.

**SHOULD WOMEN BE ASSIGNED TO COMBAT ROLES?** If they choose to and can handle it.

**WHAT WOULD YOU CHANGE ABOUT THE SERVICE?** Do away with the step promotion. Let members cross train into a different career field even if their career field is stable. Train members in a marketable skill if they are in a military career field only.

**FUTURE PLANS:** Hopefully, I can retire and raise my daughter to be of age. I want to live life to the fullest and to the best of my ability.



*"My children and I have had the opportunity to see and do exciting things in other countries." (SSgt Warner and son, 2nd Lt Eric Warner, US Army)*

**NAME AND RANK:** SMSgt Penelope A. Lynn

**LENGTH OF SERVICE:** 17 years

**PRESENT ASSIGNMENT:**

Superintendent, Logistics Plans and Programs Directorate

**PREVIOUS ASSIGNMENTS:**

Supt, Log Plans, Torrejon Spain

Supt, Log Plans, Keesler AFB, Mississippi

MICAP Control, RAF Mildenhall, England

Procedures and Standardization, RAF Lakenheath, England

NCOIC, Materiel Control, Clark AB, Philippines

Supply Clerk, Materiel Control, Shaw AFB, South Carolina

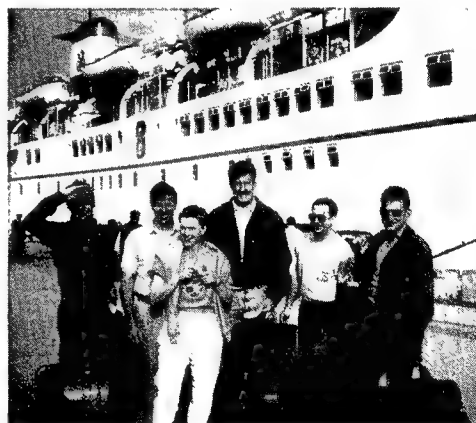
MICAP Control, Travis AFB, California

**ADVANTAGES OF BEING SERVICE MEMBER:** As a young girl growing up in England, I always had the desire to travel. An Air Force career has given me the opportunity to travel to numerous countries and work closely with foreign military personnel—a big plus in my book.

**DISADVANTAGES OF BEING SERVICE MEMBER:** No control over future assignments. Especially difficult if you have children in high school and receive notification of a pending assignment when the child is in his/her Senior year.

**ARE YOU GLAD YOU JOINED THE SERVICE?** I am extremely happy I joined the service. Opportunities have been endless—travel, education, different cultures, an exciting career for a woman.

**WOULD YOU RECOMMEND IT TO OTHERS?** Absolutely, I would not hesitate to recommend a military career for any interested woman.



*"The Air Force provides the opportunity for exciting assignments, world travel, and lasting friendships." (SMSgt Lynn poses for a picture with 16th AF team members as they prepare to board a ship within Turkey where they will conduct an on-site survey—1991)*

**MORE** →

**SHOULD WOMEN BE ASSIGNED TO COMBAT ROLES?** Women presently serving in the military should be given (if possible) a choice—somewhat like the grandfathering system. However, women entering the service today should be fully aware that they could be put in combat positions.

**WHAT WOULD YOU CHANGE ABOUT THE SERVICE?**

- Performance reports. Far too much emphasis has been put on these yearly report cards—promotions for both officers and enlisted weigh heavily on these. Far too many politics involved. Additionally, if your supervisor can't write well, it certainly doesn't help when promotion boards meet.
- I'd like to see the warrant officer program back in the Air Force. It would give our E-8s and E-9s another step to climb—something similar to promotions from O-6 to O-7, etc.

**FUTURE PLANS:**

- Hopefully to make E-9.
- Eventually become a Senior Enlisted Advisor of a MAJCOM and then shoot for CMS of the Air Force (not sure the Air Force is ready for a single female in that position).
- Help make this transition to a streamlined Air Force as easy as possible for all personnel that I come into contact with by being as knowledgeable as possible concerning programs available to assist personnel.

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**NAME AND RANK:** Captain Teresa R. Babers

**LENGTH OF SERVICE:** 9 years

**PRESENT ASSIGNMENT:**

Communications-Computer Systems Programmer/Analyst

*"I have had the opportunity to obtain job skills in numerous areas as well as supervisory experience."*

**PREVIOUS ASSIGNMENTS:**

AFIT Student at University of Texas-Austin for Master's Degree (MBA)  
Chief, Information Systems Management Branch, Lackland AFB, Texas  
Microcomputer Technology Instructor, Keesler AFB, Mississippi  
Computer Systems Development Instructor, Keesler AFB, Mississippi

**ADVANTAGES OF BEING SERVICE MEMBER:**

- Educational opportunities—received AFROTC 4-year scholarship for bachelor's degree; received master's degree through AFIT civilian institution program.
- Diversified job experience—have had the opportunity to obtain job skills in numerous areas as well as supervisory experience.
- Travel—several of my earlier assignments provided me the opportunity to travel TDY to numerous locations around the US.

**DISADVANTAGES OF BEING SERVICE MEMBER:**

- Limited control over assignments and location; may end up in a job poorly suited to one's skills or interest; may end up in an undesirable location.
- Chain of command structure and intense bureaucracy tend to create policies and decisions that are not very realistic for base-level personnel.
- Failure of government to liquidate portion of retirement fund when a member leaves the service before retirement eligible. However, the IRS says that we have an employer-provided retirement plan. Other organizations operate their plans very differently.

**ARE YOU GLAD YOU JOINED THE SERVICE?** Yes.

**WOULD YOU RECOMMEND IT TO OTHERS?** Yes. It is an excellent learning experience and way to receive job skills.

**SHOULD WOMEN BE ASSIGNED TO COMBAT ROLES?** Nobody WANTS to go to war! Yes, women as well as men who meet the necessary job requirements should be used to meet the mission of the Air Force—TO FLY AND TO FIGHT. Those men and women who do not want to be involved in combat should find employment someplace other than the military.

**WHAT WOULD YOU CHANGE ABOUT THE SERVICE?**

- The fitness/weight management programs.
- The contracting process.
- Means of getting feedback from the base-level troops when establishing regulations/policies.
- The women's uniform.

**FUTURE PLANS:** Undecided at this time; depends on the direction of the NEW Air Force. For now, I plan to do my part to meet the needs of the Air Force.



## ***Significant Events for Women in the Air Force (1948-1991)***

- 1948 - The Women's Armed Service Integration Act passed.
- 1956 - Title 10 to U.S. Code 8549 restricted women in the Air Force from combat in all but medical professions.
- 1967 - Ceilings and restrictions removed on women in the services.
- 1967 - First Air Force line women arrived in Southeast Asia (SEA).
- 1970 - Reserve Officer Training Corps opened to women.
- 1971 - Sex-based job classifications ruled unconstitutional.
- 1973 - The All-Volunteer Force put into effect.
- 1973 - Enlistment requirements for men and women standardized.
- 1976 - Air Force Academy accepted first women cadets.
- 1976 - Women accepted into pilot training.
- 1977 - Women allowed to train for Titan missile operations.
- 1977 - Navigator training opened.
- 1978 - Congress defined combat.
- 1982 - Airborne Warning and Control System opened to women.
- 1984 - KC-10 opened to women.
- 1984 - Minuteman missile crew opened to women.
- 1984 - Women participated in Operation Urgent Fury, the invasion of Grenada.
- 1985 - Women removed from jobs considered combat related.
- 1986 - AFR 35-60, *The Combat Exclusion Policy*, published. Identified those jobs and specialties women denied.
- 1986 - Women supported the Libyan bombing.
- 1988 - Integrated Minuteman missile crews.
- 1989 - Updated AFR 35-60 opened more jobs to women including those considered closer to combat.
- 1990 - Women aircrews assisted in Operation Just Cause, Panama.
- 1990 - Women participated in Desert Shield/Storm serving as aircrew members, aircraft maintainers, munitions loaders, etc.
- 1990 - Representative Patricia Schroeder initiated a bill to lift the ban on women in combat and then offered an amendment to the bill to cover the Air Force.
- 1991 - The President signed into law an amendment to repeal the exclusion of women in the Air Force and Navy from being assigned to duty in aircraft engaged in combat missions. The bill also established a 15-member commission to study all aspects of the potential for women to be assigned combat roles.

*Captain Winters*

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The Women in Military Service for America (WIMSA) Memorial Foundation was authorized by Congress in 1986 to build a memorial in Washington DC dedicated to the women who have served the US military throughout history, from the American Revolution to Operation Desert Storm and beyond.

### **Purpose**

- Honor all servicewomen—past, present and future.
- Tell their stories of service, sacrifice and achievement.
- Make their contributions a visible part of our history.
- Illustrate women's partnership with men in the defense of our nation.
- Inspire others to emulate, follow and surpass them.

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# *The Logistics Dilemma*

*Colonel Joseph B. Corcoran, Jr., USAF*

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Air Force logistics stands at an important crossroads today—one that is crucially important not only for the future of the logistics system but also in terms of what type of Air Force is affordable. This paper argues that, unless major changes are made in how logistics requirements are determined and how the retail and wholesale logistics systems interface, the choices now being made will be to the ultimate detriment of the force.

The Air Force leadership is facing hard choices as to how it will meet the funding challenges of the future. Under even the most optimal scenarios, the outlook is bleak and a series of “least hurt” choices must be made with full knowledge that none of the choices are free of great risk. To assist our leadership in making those choices, we, as logisticians, need to ensure that our needs are fully understood and represent the absolute minimum requirement. If we cannot do this, we face a return to the “hollow force” of the Carter Administration.

The determination and defense of valid logistics requirements are hindered by a number of organizational deficiencies which, in the past, have been overcome by a combination of brute funding and/or extraordinary personal intervention systems. While this has proven successful in times of liberal funding and/or high personnel authorizations, it cannot continue in the future without serious penalty to the Air Force mission. The two most significant organizational deficiencies are the lack of any meaningful wholesale/retail system interface and the lack of a system to integrate logistics requirements into a common priority system. The outcome is that no one really speaks for logistics needs and no one knows how to make allocations between logistics elements except on the most macro of scales. Until these deficiencies are corrected, logisticians cannot bring good numbers for minimal requirements to the budget table, but must instead continue to rely on “doing the best they can with what they got” rather than what is best for the Air Force.

The Air Force needs to reexamine how the logistics business is organized and how the requirements process is managed. The goal of this reexamination must be the elimination of the myriad of special interest communities that populate the logistics process and the adoption of a unified approach to requirements determination, procurement, maintenance, and distribution.

In order for this to occur on the requirements side of the house, the Air Staff must be reorganized to place policy for logistics requirements determination in one central office. This function would be responsible for ensuring that the various requirements computation systems are in agreement and utilize the same assumptions and parameters. Ideally, this function would be under the XO as operational requirements drive logistics needs and provide the assumptions that form the basis for requirements determination. However, past experience has shown that the XO community is reluctant to accept this responsibility, especially in those cases where theater commanders have vested interests. A more practical solution could be to place the function under the Vice Chief. In the short term, this would give the function the clout necessary to make the required changes. This is essential as there will be strong opposition from the existing

commodity communities to any change in how they do business, especially if that change results in a reduction in their requirements and influence. Putting all policy functions in one central place would also have the important benefit of reducing the impact of contractors on the process. The present system of fragmented responsibility has created a cottage industry for contractors who produce new ways of doing business that, while of benefit to the community involved, do not necessarily meet Air Force needs.

The second major change required is the unification of the wholesale and retail logistics communities. Under the current system, we operate two logistics systems which appear to have almost diametrically opposed goals. The consolidation of the Air Force Logistics Command (AFLC) and the Air Force Systems Command (AFSC) into the Air Force Materiel Command (AFMC) will probably sharpen this perception as the level of communications at the nodes where the two systems overlap will decrease as the wholesale system is populated by more non-logisticians. It was difficult enough to find logisticians with field level supply, maintenance, or transportation experience in AFLC before, and the reorganization should not increase those numbers. On the same note, it is almost impossible to find anyone in supply, transportation, or maintenance at base level who has ever served in the wholesale or acquisition system. This failure to cross flow functional logisticians below the colonel level has led to almost constant misperceptions of purpose and must be resolved. One possible solution is to eliminate the 66XX slots which predominate in the wholesale system and replace them with functional logisticians. Another would be to require all system program managers and other key colonel positions in the wholesale system, such as those responsible for the development of standard logistics systems, to serve at least one tour in retail level logistics other than at the colonel level. Taken together, this should provide a much more positive crossflow of information between the systems.

Another issue that requires resolution is who is in charge of the logistics system? The various retail functional communities, in the main, follow Air Staff guidance and direction. This is primarily due to the fact that the retail communities have standard data systems, and any changes to those systems can only be done with the concurrence of the Air Staff functional OPR. Thus, the Standard Base Supply System (SBSS) operates much the same at all bases regardless of command or mission. Changes to the system are corporately decided and resources prioritized based upon the good of the entire community rather than just one portion. This system has worked fairly well, especially in those cases where there is no interface requirement with the wholesale system.

Where the system falls apart is when interfaces are required. The wholesale system traditionally has built its data systems in isolation based upon internal priorities and has been reluctant to allow any Air Staff or MAJCOM review of how the systems will operate. The only major exception to this is the Weapon System Management Information System (WSMIS) where a combined wholesale/retail steering group was chartered to prioritize

system changes and modifications. Perhaps by coincidence, WSMIS is widely considered the most successful and viable wholesale/retail interface system by personnel in both systems. This joint management of data systems needs to be expanded to prevent duplication, to ensure interfaces between the two systems are made in a timely manner, and to allow for the expenditure of logistics data systems development funds on a prioritized basis for the benefit of the entire logistics system and not just one portion thereof. This would also have the additional benefit of ensuring that the needs of the ultimate customer are fully considered rather than only internal needs.

We also need to promote more standardization with the two systems. A key to doing this is the creation of standard management systems and policies within the wholesale system. Although the duties of an item manager are essentially the same in all depots, there are no standard procedures or data systems for item managers across depots. This leads to inefficiencies, proliferation of unique procedures and data systems, and the general inability to translate Air Force or AFLC policies into concrete actions at the execution level. It also leads to confusion in the retail world as every depot is organized and operates differently at the customer interface level. The principles that underpin the operations of the SBSS should be applied to the item management function in order to reap the efficiencies and benefits inherent in a standard system.

Two other major wholesale deficiencies must be addressed and corrected as soon as possible. First, some sort of system must be developed to track where the money goes. AFLC, the Air Staff, and the commands spend a great deal of time and effort in defending logistics funding requirements, especially for spare parts and repair. The problem is no one knows if any of the money is actually spent for the purposes originally authorized. The requirement goes up by weapon system and comes down by depot with major discretion in shifting funds provided. No accounting against the original program is ever provided so one is never sure, for example, whether a corporate Air Force decision to fully fund the F-111 and only fund the B-52 at 30% was accomplished. Until such a tracking system can be developed and implemented, the entire prioritization system is suspect. Second, a joint interface system must be developed to allow the commands some input into the repair process, especially in cases of limited funding. The DRIVE module of WSMIS is a start in this process and must be accelerated. But, for the system to work, manual intervention points in both repair decisions and distribution decisions must be minimized and fully visible to the retail system. If this does not occur, then the money spent on DRIVE will be wasted as the system will quickly deteriorate to the condition of the current wholesale distribution system.

On a final note concerning the wholesale system, there is an unhealthy emphasis on the use of mod-metric models to make many micro decisions. Various contractors encourage this, as it leads to the development of sophisticated systems dependent upon models. The problem with this approach is that mod-metric models have little or no validity in predicting failures or requirements when a small number of aircraft are involved. The models are useful in predicting failures for the entire F-16 fleet, have some validity at large primary authorized aircraft (PAA) F-16 wings, and will have almost no predictive value in small PAA composite wings. The models use average data over time and no unit is average. This is a lesson sometimes forgotten when contractors pitch their models. It is interesting to note that these types of models are primarily pushed in the wholesale world in what appears to be an attempt to reduce the ability of the retail system to influence repair and distribution.

In fairness to the wholesale system, the retail system is also not lily-white. The major problem is unrealistic expectations which can never be fulfilled no matter how efficient the wholesale system is. The unspoken goal of the retail logistics system is to achieve a 100% mission capable fleet which has the wherewithal necessary to go to war on a short-notice basis. As this cannot be achieved given funding realities and the nature of the wholesale system, the retail system has essentially become one of workarounds, most of them with significant cost penalties. The most obvious of these is the lateral support network developed to overcome the perceived inefficiency of the wholesale distribution system. Lateral support has grown dramatically in the last ten years as large investments were made in premium transportation and communications systems, all designed to move critical parts between bases in as short a time as possible. The system has become so efficient that, in many cases, it is used for grounding requirements prior to going to the wholesale system. The rapid growth in cannibalization as a preferred retail policy also illustrates the length to which the retail system will go to maximize aircraft availability. Parts are not only routinely cannibalized to consolidate aircraft holes but also cannibalized in mass to transfer the accumulated holes from aircraft to aircraft.

While the various workarounds adopted have proven highly successful in maximizing mission capability numbers, no one has ever examined the costs involved and whether any true benefits actually accrue from all of this intensive management. The Air National Guard has traditionally adopted a policy of relying almost exclusively on wholesale level support for parts. This means that most Guard units do not pull from war readiness spares kits (WRSKs) or cannibalize unless there is a shortage of mission capable aircraft to fly the peacetime training requirements. This is radically different from the active force policy of maintaining as many aircraft as possible mission capable regardless of whether there is a shortage of airframes. This active policy leads to intensive management of the last five aircraft in a wing regardless of whether they are PAA required or backup aircraft inventory (BAI), or necessary to execute the flying schedule. Given that cost profiles go up sharply whenever we are attempting to reach 100% of any objective, we need to reexamine whether the costs inherent in intensive management of a small number of airframes are matched by any real benefits in terms of operational capability. This is especially true in those cases where we are expediting delivery of parts that are destined to go on a "cann bird" and have no immediate utility.

This constant search for 100% mission capability leads to many and sundry abuses of the logistics system. Bases constantly try to subvert the system by double ordering parts, inflating the priority of requirements, reporting false mission capabilities (MICAPs), conducting lateral support searches for critical parts, and refusing to honor lateral support requests or item manager redistribution orders. They also send maintenance personnel TDY to depots to repair parts or set up capabilities to do unauthorized (unauthorized in the sense that the depot has reserved the repair rights to themselves) repairs. All of these things get done to influence the wholesale distribution system in such a way as to benefit their base. MAJCOMs also participate in this effort as they attempt to bias the system for the benefit of their commands. All of these efforts are made in good faith, but the question is whether or not the Air Force as a whole benefits when the distribution system is subject to intensive gaming by all participants.

The solution to this problem is not to penalize the field customers for trying to influence the system but rather to determine why the system is so open to influence to start with.

The problem lies with how the wholesale system is operated. Rather than operating in an almost automatic mode in accordance with established priorities, the wholesale system is almost totally operated on a manual basis for items in short supply. Materiel management review codes are placed on those items and the item manager determines distribution. One theory for why this occurs is that the item manager is graded on response to MICAP requisitions, not the absence of them. This is directly opposed to the field approach that the goal is to never have a MICAP and that it is unreasonable to hoard assets in a depot transportation lead time away from the broken airplane. The bottom line result of all this massive manual intervention in the distribution system is that the item managers do not trust the validity of field requisitions while the field becomes convinced that the item managers are more interested in looking good than in maximizing the combat capability of the Air Force. Both sides are right while being perfectly wrong.

There is no easy fix to the retail side of the equation, as it will require a major shift in thinking by the operations community. As long as the Chiefs of Maintenance and Supply are graded on how close they come to perfection, costly workarounds and abuses of the system will continue. Any change will be resisted fiercely as many will see any lessening of the various standards as the first steps to the return of the hollow force. This could be true if the downsizing is not properly managed. However, it would be much more effective if we could manage some degradation in current standards by eliminating high cost workarounds and using the money saved to buy real not reported combat capability.

Turning to the logistics requirements computation process, this appears most resolvable in the near term. Simply stated, we need the establishment of a system to integrate logistics requirements into a common priority system. The Air Force has paid lip service to this requirement for years and has dropped countless dollars into the development of measurement systems which purport to tell us how to allocate our funding to achieve balanced logistics support. All have met with some degree of success, much of it illusory in my opinion. The basic problem is that, from a policy standpoint, the assumptions which drive the requirements are all mutually exclusive and primarily designed to maximize the requirements for the resource being computed. A brief survey of the way WRM requirements for various logistics commodities are computed points out this disconnect.

- **Spare Engines.** The Air Force has a sizable investment in spare engines required to support war reserve materiel (WRM) requirements. If we look at the assumptions used by the engine community, these requirements appear valid. However, if we use the assumptions used by the war readiness spares kit/base-level self-sufficiency spares (WRSK/BLSS) community, there is no requirement for a single WRM spare engine. In fact, using those assumptions, we have more spare engines than airplanes at the end of the initial support period. Adoption of the WRSK/BLSS assumptions would save the Air Force substantial amounts of funding to procure and maintain unneeded engines without lessening combat capability. This change has been resisted strongly within the engine and operational communities as those extra engines are necessary to ensure that some semblance of serviceable spare engine levels can be maintained in the field.

- **Equipment.** The equipment requirement process is the worst in the Air Force. Mobility equipment is routinely authorized and procured but never deployed. Requirements are not based upon standard wartime assumptions such as turn times or sortie rates but rather on the judgment of the "old boy" network that attends Tables of Allowance reviews. This leads to a system in which there is constant turbulence in requirements

as the players change and a lot of marginal requirements that never make the mobility load plan. A graphic illustration of a major policy disconnect between commodities can be seen upon examination of what occurs when a line replaceable unit (LRU) wartime repair policy is changed from remove and replace, to remove, repair, and replace or vice versa. Such a change has an impact on wartime spares, equipment, and manpower requirements but is almost always arrived at in isolation. Accordingly, the WRSK/BLSS community will change an LRU to rapid runway repair (RRR), but the necessary adjustments will never be made to the manpower or equipment portions of the deployment package.

- **Maintenance Manpower.** Maintenance manpower requirements are based upon the Logistics Composite Model (LCOM). While those portions of the model that deal with pure maintenance functions have been validated over time, the supply portion is of dubious validity. Rather than using the WRSK/BLSS as the data portion for spares availability and needs, the model takes data from a single unit that is usually outdated in terms of the current configuration of the fleet. This can lead to an overstatement of requirements as the model is producing spares that do not exist or is repairing spares that are either coded for remove and replace or are excess to requirements. Personal experience during the Coronet Warrior series of exercises leads me to believe we have excess maintenance capability to meet our surge wartime requirements given the assumptions used to build WRSK/BLSS.

- **Munitions and Tanks, Racks, Adapters, and Pylons (TRAP).** Coronet Warrior showed the total inadequacy of the expenditure per sortie factor procedure. This is a process that no one appears to be responsible for and is subject to change without any review in the budgetary process. The initial WRM Improvement Conference in 1979 found that no one is really sure how most of the current Expenditure Per Sortie Factors (EPSFs) were arrived at. Coronet Warrior found the same condition existed ten years later. While the determination of EPSF is an operational requirement, logisticians have to constantly look over their shoulders to ensure that some rigor is placed in the system. This is especially important if a system of equitable allocation of funds between competing logistics systems is adopted. The system cannot work to the benefit of the Air Force if one portion is unbalanced due to inflated requirements. This same rigor must be applied to the nonnuclear consumables annual analysis (NCAA) process to reduce the constant fluctuations in requirements that now occur. Significant changes in the target base, weaponeering, and tactics should only occur after budgetary and capability analyses have been performed and the real costs determined. The relative freedom now given to theater commanders in the determination of munitions requirements and the calculation of EPSF requires reexamination to ensure that the corporate Air Force understands the costs of making what can appear to be relatively minor operational changes.

- **Operational Requirements Determination.** Why do we calculate some requirements such as spares, engines, personnel, and equipment against the War and Mobilization Plan (WMP) requirements and others such as munitions, TRAP, and fuels against theater requirements? The issue becomes really important when we try to determine allocation of resources. We can measure 30 days of fuels requirements against a specific OPLAN, but we can only measure spares against the WMP. In terms of resource allocation, all commodities should be measured against the standard rather than theater specific. Not doing so will create false unbalanced reporting and also ensure that theater plans continue to be requirements versus capabilities plans.

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## *Please Debrief Me!*

*Major James T. Silva, USAF*

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Debriefing aircrews after flight has always been a critical maintenance function. It is the one place where operators and maintainers get together to figure out what is exactly wrong with any system on an aircraft. The operators identify what system malfunctioned during flight, and the maintainers ask pertinent questions to determine what component caused that particular system to fail. The process is essentially the same no matter what aircraft one chooses to consider.

The debriefing process has had some inherent flaws for many years. It requires the assignment of debriefing technicians knowledgeable about many aircraft subsystems. Technicians with this expertise are hard to find. And if there is one around in a maintenance unit, management can hardly afford to put that individual in the debriefing section. In addition, a complete understanding of the Core Automated Maintenance System (CAMS) debriefing module is essential. Still further, when CAMS is "down," the debriefer must be knowledgeable about a host of manual procedures to conduct an effective aircrew debrief.

But, there is hope! The Computerized Fault Reporting System (CFRS) offers a fundamental change in debriefing philosophy. CFRS is a Tactical Air Command (TAC) headquarters initiative designed to increase the reliability and maintainability of the F-15E weapon system through the accurate generation of maintenance fault reporting codes. CFRS actually provides an automated interface between aircrews and maintenance personnel.

McDonnell Aircraft Company (McAIR) developed CFRS as an expert system with a knowledge base to couple aircraft built-in-test (BIT) information with flight parameters and pilot reported indications. CFRS provides exact definitions of system malfunctions based on configuration data. Upon job closeout, data recorded by the maintenance technician enables CFRS to score subsequent aircraft sorties as "repeat" or "recur" discrepancies.

The 555th Fighter Squadron (FS) at Luke AFB, Arizona, is the first unit to debrief using CFRS. The "Triple Nickel" aircrews enter maintenance data from their F-15E sorties into standard microcomputers with 386 microprocessors. Instead of a maintenance person asking all the questions about a flight occurrence, the computer does the quizzing. The pilot or weapon systems officer (WSO) sits down in front of a CFRS terminal, uses a mouse input device to point and click, and follows on-screen prompts to give CFRS the information it needs. CFRS offers the first opportunity to use color and detailed graphics as a tool to aid the debrief process. Major Jim Gagnon, an instructor from the 555th FS, said facing the computer is easy:

Even if you're computer-illiterate, after you've done it a few times, you understand it. It's very user friendly.

CFRS is basically a technical order (TO) with some enhancements. The fault reporting and -06 work unit code manuals are incorporated into the system software. The remainder of the system's software includes rules and graphics to run and display the expert system. CFRS architecture contains three nodes, each

carrying a TO designation (indicating it is managed through the Air Force TO system). However, the TO update process can be radically accelerated. CFRS can reduce the over 210-day change process to 30 to 60 days. This timely feedback loop has the potential to significantly improve the confidence technicians have with the TO change process and will eliminate ambiguities in the fault reporting and fault isolation manuals.

Implementing CFRS in a standard TAC fighter squadron calls for 15 to 20 microcomputers. The benefits of CFRS to maintenance outweigh the costs for these computers several times over. Aircraft maintenance units not only gain new terminals for CFRS, but also gain additional computing power. Because of the multitasking capability of the 386 microprocessors, maintenance units will be able to load and use additional software in the CFRS computers. Maintenance personnel can use the computers for word processing or a variety of other applications.

More importantly, CFRS has the ability to reduce maintenance troubleshooting time and increase aircraft mission capability rates. According to Rob Koeneman, the McAIR senior technical specialist in charge of installing the system at Luke AFB:

CFRS has the ability to not only tell you about failures the crew observed, but can make predictions about impending failures.

To the maintainer, using CFRS predictions as the basis for maintenance looks a lot like repairing a good system that is not broken (because the aircrew may not have reported a failure). Prior to CFRS, there has been no way to track maintenance data to the point where predictive pulls/repairs could be made. Any maintainers who have ever worked on an F-4 or F-111 know they waited for the pilot to tell them a system failed before they ever attempted to do any kind of repair. A common phrase among those aircraft maintenance personnel was, "If it ain't broke, don't fix it."

But the F-15E is a different type of aircraft where the aircrew may not witness a malfunction and the BIT is predicting a failure. According to Captain John Mabes, the maintenance information systems branch chief from TAC headquarters:

CFRS makes us have to go back and look at the way we fix aircraft. Do we want to only fix what's broken now, or do we want to fix things that may cause a hard failure two or three flights down the road?

While HQ TAC is resolving that problem, CFRS still provides benefits to the maintenance process. By more accurately defining a system failure, CFRS can relieve some parts shortages by specifically pinpointing faults and preventing unnecessary component replacement. CFRS also helps the maintainers analyze system performance and schedule their work. It then provides technicians with recommended procedures to correct a malfunction, whether it is a troubleshooting action, a repair (remove and replace), or a system checkout.

After seeing all this information about what CFRS is, how it works, and its associated benefits, the prime question in everyone's mind should be: Does it talk to CAMS? The answer is

yes. CFRS effectively interfaces with CAMS. Data collected during debriefing is passed to CAMS for processing. In addition, jobs are scheduled and closed out through CFRS with the applicable data being forwarded to CAMS as required. Because CFRS is microcomputer based, it permits debriefing operations in deployed situations independent of the CAMS mainframe system.

Is this system for you? Right now, CFRS works only with the F-15E aircraft. CFRS can also only be used with weapon systems managed under the fault reporting and fault isolation type of technical order system (MIL-M-83495). However, the system is structured to allow other weapon systems to substitute the rule bases for determining faults and the aircraft configuration data to make CFRS run. Some reprogramming may need to be done so other graphics can be imported into CFRS. McAIR is working now to develop CFRS for the F-15A through D models. General Dynamics Fort Worth Division (F-16) is currently reviewing CFRS to determine how long it will take and how much it will cost to implement an F-16 system.

CFRS for new aircraft (F-22, C-17, and B-2) will take shape in the form of an integrated information system for base-level maintenance. The debriefing function will be in much the same form as CFRS. Ultimately, CFRS is just the first link of a system the Air Force needs to give us a better description of what and where problems are so engineers can determine why parts failed and change component design to improve reliability and maintainability.

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Continued from page 18

In summary, the purpose of this paper is not to criticize the manner in which things are being done today but rather to point out that inefficiencies exist which require correction. All of the personnel in the wholesale and retail communities and the various commodity communities are doing an outstanding job. The high mission capable (MC) rates constantly maintained in the field and the superb job Air Force logistics did in Desert Shield/Storm prove that beyond doubt. The problem is not the quality of the current logistics systems but how to accomplish the reductions necessary in those areas without sacrificing any

more combat capability than absolutely essential. We need to uniformly reduce using the same basic measurement to accomplish that reduction. The problem is the communities have such widely differing baselines that cuts will be made on a best guess rather than an informed basis. That is the dilemma the Air Force logistician faces.

*Colonel Corcoran wrote this article while a National Security Fellow at Harvard University, John F. Kennedy School of Government, Cambridge, Massachusetts.*



# Tactical Fighter Wing Reorganization: The Implications for the Maintenance Officer

Major Joseph B. Michels, Ph.D., C.P.L., USAF

## Introduction

The career path for the career maintenance officer has been significantly altered in the last year due to Headquarters Air Force mandated organizational realignments designed to improve combat efficiency and capability. The Chief of Staff of the Air Force, General Merrill A. McPeak, has directed that tactical fighter wings become more responsive to the operational warfighting mission and also achieve some economies of scale in manpower savings and organizational efficiencies. The 347th Tactical Fighter Wing, Moody AFB, Georgia, was selected by Tactical Air Command as the "test base" for one form of organizational alignment, seeking to demonstrate that disestablishing the Aircraft Generation Squadron (AGS) and integrating the maintenance officer into the Tactical Fighter Squadron (TFS) provides greater support and improved maintenance effectiveness. This article will address the role of the maintenance officer in this new organizational alignment. Future articles will address other organizational issues germane to aircraft maintenance and this new organizational alignment.

## Background

In late November 1990, the Air Force Deputy Chief of Staff for Logistics called the 347th Deputy Commander for Maintenance (DCM) to the Pentagon and told him to prepare an operational plan that allowed for the disestablishment of the Aircraft Generation Squadron, significant manpower savings in the maintenance complex, and increased efficiency and scale of operations in an operational theater. The DCM then formed a working group comprised of the three maintenance squadron

commanders and, working for three straight weeks, was able to develop a plan which fulfilled the direction of the AF/LG. The group first briefed the plan to the Tactical Air Command Commander and Staff and then to senior Air Force leaders at the Pentagon. They all approved the plan with some minor modifications.

## Reorganization

Consistent with Air Staff direction, we then began our one-year test period with many changes.

The Deputy Commanders for Resource Management, Operations, and Maintenance were all disestablished. The Combat Support Group was redesignated as the Support Group. The Deputy Commander for Resource Management at Moody was designated as the Deputy Group Commander for the Logistics Group. The Deputy Commander for Operations was redesignated as the Operations Group Commander. The Operations Support Squadron (OSS), Tactical Fighter Squadron (TFS), Air Refueling Squadron (ARS), and Tactical Reconnaissance Squadron (TRS) were placed under the Operations Group Commander.

See Figure 1 for the organizational alignment. Any particular wing may not have all identified squadrons; this chart is for a notional wing.

The Deputy Commander for Maintenance was redesignated as the Logistics Group Commander. The Logistics Support Squadron (LSS), the Maintenance Squadron (MS), Supply Squadron, Transportation Squadron, and Contracting were

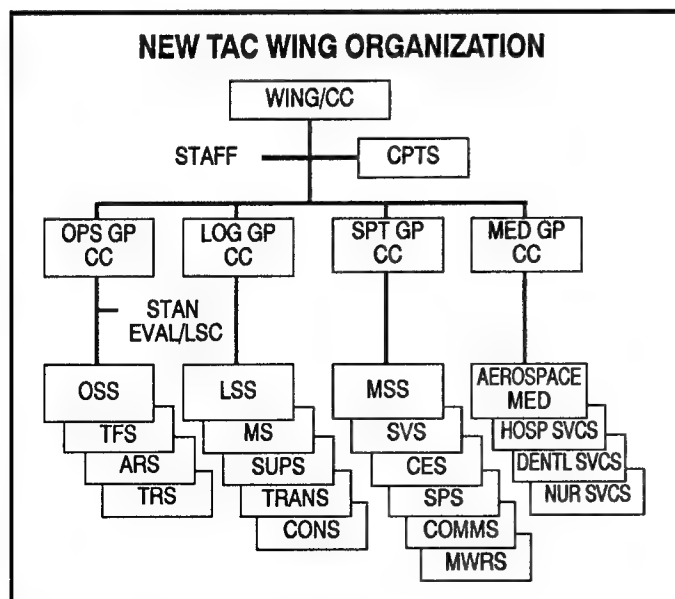


Figure 1.

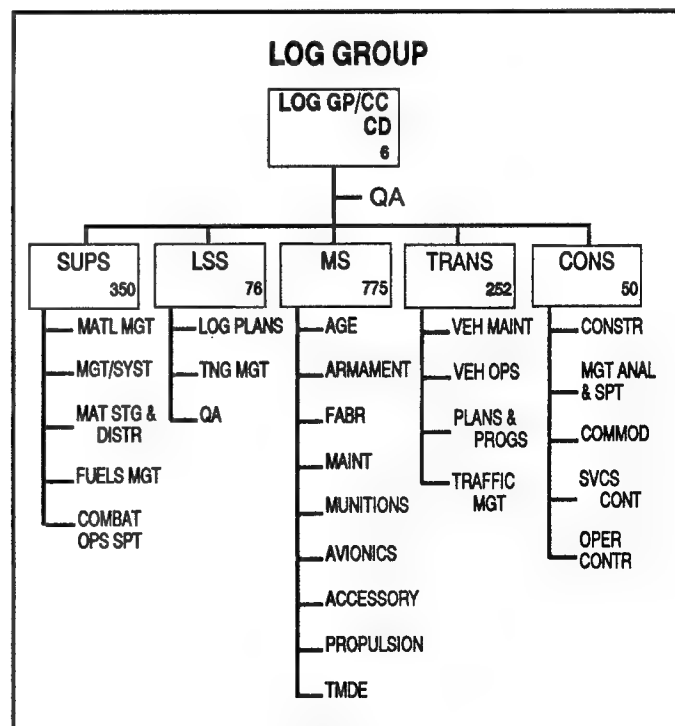


Figure 2.

placed under the Logistics Group Commander. The Support Group remained the same except for the addition of the Communications Squadron. No changes were made in the Medical Group. See Figure 2 for the organizational alignment.

The former DCM, now the Logistics Group Commander, who was designated as the "test director" for the test period, developed the test plan and ensured that all organizational alignments were accomplished.

With the deactivation of the Aircraft Generation Squadron, the TFS Commander is responsible for all maintenance on the aircraft assigned to the Squadron. This organizational alignment is consistent with how a TFS deploys to an operational theater, with the on-scene commander responsible for all maintenance personnel and all aircraft maintenance actions.

In order to prepare the operations community for their new roles and responsibilities associated with aircraft maintenance and maintenance personnel, HQ TAC presented an abbreviated version of the Tactical Air Command Senior Level Maintenance Course (SLMC) to cognizant operations and maintenance personnel (lieutenant colonels and above in one session and majors through chief master sergeants in a second session). This information was new to all operations personnel and exposed them to the various nuances of aircraft maintenance which they may have only vaguely heard about through wing scheduling meetings. Logistics officers, including those from supply and transportation, were included in the second session. This allowed officers from those disciplines who may not have had in-depth previous exposure to aircraft maintenance to learn and understand some of the key, significant high points of aircraft maintenance.

Maintenance officers assigned to the Aircraft Generation Squadron who worked in the Aircraft Maintenance Units (AMUs) were all assigned to their respective TFSs. The level of AGS supervision that previously provided common guidance for all AMUs was eliminated. However, a maintenance officer position was established in each TFS. This field grade officer position is organizationally equivalent to the TFS operations officer. The manpower authorizations were obtained from the deactivation of the former DCM staff and AGS commander positions. These positions are all lieutenant colonel authorizations, consistent with the organizational equivalency of the TFS operations officer. At Moody, the TFS maintenance officers were junior majors who had had previous AGS maintenance supervisor experience and were identified on the Tactical Air Command Maintenance Squadron Commanders List.

For the purposes of the test, the Aircraft Maintenance Unit was redesignated as the Squadron Maintenance Unit (SMU). The SMU is comprised of two aircraft flights, the weapons flight, and the specialist and support flights.

The SMU alignment allows for a more experienced maintenance officer with four to seven years of experience in both flight-line and support shop operations to be the natural choice for the Officer in Charge (OIC) of this unit. The support branch is comprised of the debrief function and the support section. The debrief function has always been a constituent part of the AMU under the AGS concept, so no change was found in that alignment. With the decentralization of the former DCM staff, the dedicated AMU maintenance analyst was assigned directly in the SMU, to more readily help the maintenance officer identify trends and other anomalies which may not be readily recognized in a centralized environment. Additionally, the decentralization of the analysis function provides greater involvement and understanding of the overall mission goals. This understanding allows the analyst to do a better job of

tracking problem areas and recognizing areas where trends may be occurring. The aircraft maintenance support section is responsible for issuance of tool boxes, supply liaison, and ordering spare parts. The mobility NCO for the SMU and the dedicated training monitor are also part of this function. At first glance, many people thought the maintenance officer was manned at too high a level (lieutenant colonel), a normal Aircraft Maintenance Unit having been run by a captain. To the contrary, the maintenance officer now must deal directly with the operations officer and be able to accurately and effectively communicate maintenance concerns to the commander.

"This is a tough job, because we have not traditionally raised our fighter squadron commanders to be well versed in the maintenance business," said Colonel Paul Dilling, 347 Logistics Group Commander. He continued, "Maintenance is a demanding, complex profession that career maintainers didn't learn overnight—we have a big educational task ahead of us and we need to do it quickly if we are going to be effective. I argue that one of the toughest jobs a maintenance officer will fulfill is that of the flying squadron maintenance officer. He will be the best that you have, a guy or gal that is not afraid to tell his/her bosses where the problems are—a task some don't like because their bosses don't understand the scope of their new responsibilities yet."

Colonel Dilling further stated, "It is our job, as career maintainers to make them smart in maintenance. If you have been in this business any length of time, you know you are going to hear a lot of 'bad' news—but I sure would have rather heard it first and ferret it out myself and get the problem fixed than be blindsided by it."

The two remaining maintenance squadrons, the Equipment Maintenance Squadron and the Component Repair Squadron, will merge into one Maintenance Squadron (MS) (Figure 3). All officers assigned to those squadrons will remain in their current positions.

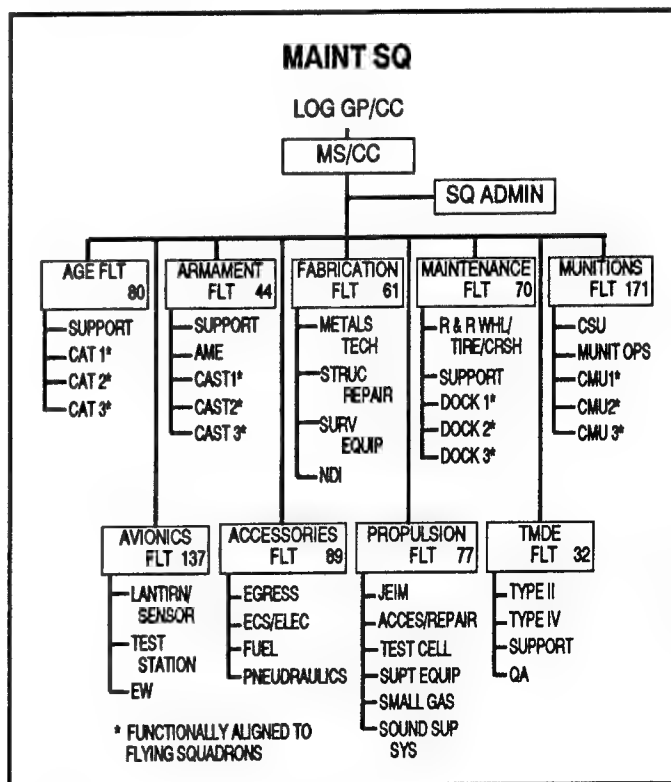


Figure 3.



The Maintenance Squadron will have all the elements of the Component Repair Squadron and the Equipment Maintenance Squadron. Some economies of scale will be realized with the reduction of the overhead function and elimination of the commander, first sergeant, squadron section commander, orderly room, and training and mobility functions. Some orderly room personnel and training and mobility personnel will be added to the maintenance squadron to sustain the full field of operations that the Maintenance Squadron will encompass. This squadron will be approximately 800 personnel in strength. However, this is not uncommon to the former Aircraft Generation Squadron, where 800-900 personnel were the normal assigned strength.

The Logistics Support Squadron encompassed the training management quality assurance and the logistics plans for the test. The logistics plans function is very similar to the old "combat plans office" under the DCM concept.

### Discussion

The obvious initial question for any junior maintenance officer is, "What has happened to my career progression if this paradigm is to be the model for the Tactical Air Forces and the United States Air Force?" The initial answer is "Nothing." That answer is based upon the following premises. In the first one to eight years of a maintenance officer's career, the officer will be assigned to a variety of different wing maintenance positions, both on the flight line and in the support shops as a branch chief. This cross-pollination between both the Logistics and Operations Groups allows a young officer to see the various unique and special requirements of both groups. This ability to use an individual in either group allows the experience gained in one group to be transferred to the other group, further enriching and increasing the understanding of not only the young officer but also the requirements of the group. Hard work, attention to detail, and focusing on initial skill development in both leadership and technical task proficiency should allow junior maintenance officers to develop the skills required to become a maintenance supervisor in one of the support squadrons (Maintenance Squadron or the Logistics Support Squadron) or as an assistant squadron maintenance officer in the TFS. With the plethora of maintenance officers that are currently senior captains, coupled with the downsizing of United States Air Forces overseas, this author projects that many experienced captains will serve as flight chiefs at the seven-to-eight-year period in their careers. This should bode well for the TFS commander, for having an officer of this experience level in the squadron should allow for significantly less maintenance problems and increased operational up time.

Captains with nine to eleven years of experience will most likely find themselves as assistant maintenance officers, performing the myriad of duties formerly associated with "AGS supervision" and coordinating between the different TFSs to

ensure standardization and wise use of unique wing resources (paint barn, phase dock requirements, weapons load standardization training, integrated combat turn training).

Officers who have this same tenure are also available to serve as assistant maintenance supervisors in the Maintenance Support Squadron or Logistics Support Squadron. In some unique instances, these officers may, indeed, serve as the maintenance supervisor when field grade officers are either unavailable or assigned to the TFS.

Maintenance officers in the grade of major and lieutenant colonel may find that their initial field grade duty will be in the TFS as the maintenance officer. The maintenance supervisor position in either the MS or LSS is also a slot to which junior field grade officers may be assigned.

Squadron commanders for either the MS or LSS will most probably be lieutenant colonels who have had considerable experience in both the Logistics and Operations Groups. Considerable experience in either group is not a hard requisite for a command position, but an individual possessing experience in both groups will allow for greater divergence of understanding of the multitude of problems which occur each day at wing level.

The field grade maintenance officer assigned to the TFS is required to be actively involved in all facets of the squadron's maintenance activities. This includes shift work, night time duty, and deployments. As the TFS commander may be unfamiliar with aircraft maintenance and the attendant personnel problems associated with it, the field grade maintenance officer is the key link to ensuring that TAC standards are upheld. As TFS field grade maintenance officers have had previous service as AGS maintenance supervisors, they have been trained in the nuances and details which are required to have a successful flying operation.

TFS commanders are learning that they need to put more of their time into the maintenance function, spending more time in the maintenance area and becoming more involved in the overall maintenance effort of their respective squadron and the wing in general. This transfiguration will not occur overnight. More time will be required before the change is made completely. In the meantime, the role of the maintenance officer continues to grow in stature and importance. As the Air Force continues to downsize and streamline, significant changes are in store for all Air Force maintenance officers. Those officers who possess a "positive can-do" attitude will continue to be highly successful. Those individuals who are unable to adapt to change will find that career opportunities in the civilian sector may become more attractive and may desire to initiate strong action to pursue those goals outside the Air Force.

*Major Michels was Commander, 347 Equipment Maintenance Squadron, 347 TFW, Moody AFB, Georgia, when he wrote this article. He is presently assigned to HQ USAF/CCX.*



# *The Maintenance Officer Role in the Objective Wing Organization*

*Major Joseph R. Rine, Jr., USAF*

By now, we have all heard about the restructuring of several Air Force wings. In a nutshell, the restructuring places organizational maintenance in the flying squadrons; places all off-equipment maintenance in a Maintenance Squadron (or two squadrons where manning dictates with MAJCOM approval) in the Logistics Group (LG); replaces the Deputy Commander for Maintenance (DCM) and Resource Manager (RM) with the Logistics Group Commander; and splits up the DCM staff and places it in the Operations Support Squadron, which is under the Operations Group Commander, and the Logistics Support Squadron, which is under the LG. As professional maintainers, we still need to provide input on the final formation of the organization; but I will not attempt that in this article. General Merrill A. McPeak, in his "Composite Wing" article in the Fall 1990 *Airpower Journal*, touches on this concept. His thoughts are:

I favor a move towards two-level maintenance for all our wings, composite or otherwise. This would offload elaborate intermediate level equipment requirements, improving deployability. We could also downsize the maintenance establishment at wing level, including removal of considerable overhead. Retaining only organizational maintenance in the wing permits us to contemplate returning flight-line maintenance to the flying squadrons, increasing unit cohesion.

I have heard many reasons for not restructuring (and breaking up the DCM organization). Three of the most often heard are reduced combat capability (ability to generate), increased safety of flight problems, and the loss of officer leadership for our enlisted force. Smart teamwork and strong leadership should resolve these problems. Many wings have already reorganized. As professional logisticians, our job now is to make it work.

Just because we will now be split between the Operations Group and the Logistics Group does not mean we are on different teams. I think we need to maintain the philosophy that we are in this together, and together we can make it work. We will still need to move officers between the flying squadrons and the Maintenance Squadron. It is the job of the Operations Group and the Logistics Group commanders to make this happen. A maintenance officer with experience in both the flying squadron and the maintenance squadron will be more valuable than an officer with experience in only one type of squadron.

We will need strong leaders in the maintenance officer (O-5, N4016) positions in the flying squadrons. That maintenance officer will be much more than an Aircraft Maintenance Unit

(AMU) OIC. The flying squadron commander will depend on that individual to provide the necessary management and leadership to consistently furnish quality aircraft which will accomplish the mission. Will the flying squadron commander and the maintenance officer always agree? Maybe not, but that doesn't mean they can't work together. Those wings where the maintenance squadron and the flying squadrons work together will succeed. Together they will work on safety of flight issues and aircraft generation efforts. This was difficult enough in the old system; it will be even more challenging now. The bottom line is the need for quality maintenance officers is not going to go away; I know it, you know it, and the operations community knows it.

Now what will happen to career progression for the maintenance officer? It will be different, but the opportunities for advancement/promotion do not disappear. Company grade authorizations will be hard core maintenance jobs, as they have been in the past. There will be big changes for the field graders—no more DCM staff jobs or Component Repair Squadron (CRS) and Aircraft Generation Squadron (AGS) commander positions. Instead we will have to spend a few years as an Operations Squadron Maintenance Officer. That job will be great for a senior major or young lieutenant colonel. In the past those jobs in fighter interceptor squadrons had a great promotion rate to lieutenant colonel. Majors will also have the opportunity to compete for the Logistics Support Squadron commander's job.

Defense Management Review initiatives, overseas and CONUS base closures, and now the wing restructure will all result in a decreased number of 40XX authorizations, yet approximately the same percentage of authorizations for each grade. But we are not the only ones losing authorizations; the entire Air Force is shrinking. There is no doubt that, for the next few years, we will be very well manned in field graders (until the personnel programs designed to trim the force catch up with our reduced authorizations). The competition for those field grade positions will remain keen; it would have been even without the wing restructure. For those willing to meet the challenge, the rewards will be great.

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**JLR**

# Competition: A New Way of Life for the DOD Depots

Colonel David M. Rigsbee, USAF

Shelly West

## Background

Congressionally mandated cuts in defense funding are not new. The recent round of budget cuts began in earnest with the Balanced Budget Amendment of 1985, commonly known as the Gramm-Rudman Amendment. All one has to do is pick up a newspaper or have listened to the President's State of the Union Address earlier this year to understand that these reductions are going to continue and likely intensify. The dismantling of the Soviet Union and the accompanying threat reduction, coupled with a continued economic recession here at home, place all military programs under pressure for increased cuts. In past times, depot and base closures have been one of the results of defense drawdowns. Today, DOD maintenance depots have the opportunity to influence the drawdown process by becoming more competitive with other providers of maintenance and support services.

DOD has had previous experience with depot closures. The Army closed the first supply and aviation repair depots after World War I, in the early 1920s. Several more depots were closed in the 1930s, during the Great Depression. Conversely, in the early war years of the 1940s, seven depots were opened. After the war, in the late 1940s and early 1950s, the cycle of depot closures began again. During the 1960s, due to major realignments and consolidation efforts, over 18 major supply, aviation repair, and air materiel area depots were deactivated. Since that time, the Air Force has operated five major depots (Air Logistics Centers at Ogden (OO-ALC), Oklahoma City (OC-ALC) Sacramento (SM-ALC), San Antonio (SA-ALC), and Warner-Robins (WR-ALC)) and two smaller facilities (Aerospace Guidance Metrology Center (AGMC) and Aerospace Maintenance and Regeneration Center (AMARC)). This expand and contract cycle, while solving short-term budgetary objectives, is not the optimum solution if one of our objectives is to maintain a strong, vibrant, albeit smaller, defense capability.

The current strategy within DOD and the newly formed Air Force Materiel Command (AFMC) to achieve the latter objective has been twofold: to retain the infrastructure investment and capability represented by the current depots and manage the downsizing of the military services without a

degradation of the readiness of the remaining forces. One of the many initiatives to accomplish this is DMRD (Defense Management Review Decision) 908, "Strengthening Depot Level Maintenance," signed by Deputy Secretary of Defense Donald J. Atwood on 17 November 1990. Although severe in impact, it offers some possible alternatives to the previous cycle of closures. In it, the services are directed to attain long-range cost savings in the amount of 2.2 billion dollars and near-term savings of 1.7 billion dollars over the period FY91 through FY95. The Air Force portion of these savings is 719.4 million dollars in the long-range category and 391 million dollars in the near-term category. Near-term savings were to be achieved through a streamlining effort in FY90-91, which reorganized the depots into the current product line structure, and through downsizing of the maintenance infrastructure.

## Savings Strategies

The three main strategies for achieving long-range savings are increased workloads between Services (interservice), improved capacity utilization (thereby reducing the operating costs of the depot), and competition of workloads. The AF envisions achieving more than 80% of the mandated savings from actual competition and applying the lessons learned from these competitions to other workloads to reduce the cost of repair to our customers. Figure 1 shows the savings required from AFMC for the three areas through FY97. FY96 and FY97 were recently added to the original FY91 to FY95 requirement. SA-ALC's portion of the long-range savings, for example, is 312.28 million dollars (Figure 2).

The cost reductions must be achieved since the money has already been taken from the customers' (operational units) budget. If we do not make real reductions, customers will not be able to buy the level of support they need. Therefore, failure to achieve the mandated savings is a prelude to a return to the support levels of the seventies and is not an acceptable outcome. Customers also have new options. They will be allowed to seek alternate sources of support in the private sector.

### COMMAND SAVINGS MANDATE

|                | FY91 | FY92 | FY93  | FY94  | FY95  | FY96  | FY97  | TOT    |
|----------------|------|------|-------|-------|-------|-------|-------|--------|
| INTERSERVICE   |      | 5.6  | 11.2  | 16.9  | 22.5  | 28.1  | 33.7  | 118.0  |
| CAPACITY       | 5.9  | 11.7 | 23.4  | 23.4  | 23.4  | 23.4  | 23.4  | 134.6  |
| COMPETITION    |      | 64.0 | 95.9  | 159.8 | 255.7 | 241.2 | 248.1 | 1064.7 |
| TOTAL          | 5.9  | 81.3 | 130.5 | 200.1 | 301.6 | 292.7 | 305.2 | 1317.3 |
| \$ IN MILLIONS |      |      |       |       |       |       |       |        |

Figure 1.

### SA-ALC SAVINGS MANDATE

|                                      | FY91 | FY92  | FY93  | FY94  | FY95  | FY96  | FY97  | TOT    |
|--------------------------------------|------|-------|-------|-------|-------|-------|-------|--------|
| COMPETITION                          | 0.00 | 15.36 | 23.02 | 38.35 | 61.37 | 57.89 | 59.54 | 255.53 |
| INTERSERVICE                         | 0.00 | 1.34  | 2.69  | 4.06  | 5.40  | 6.74  | 8.09  | 29.32  |
| CAPACITY                             | 1.23 | 2.43  | 4.87  | 4.87  | 4.87  | 5.08  | 5.08  | 28.43  |
| TOTAL                                | 1.23 | 19.13 | 30.58 | 47.28 | 71.64 | 69.71 | 72.71 | 312.28 |
| SA-ALC REQUIRED SAVINGS (\$ MILLION) |      |       |       |       |       |       |       |        |

Figure 2

## Competition

Figure 3 shows the FY91 competition candidates by ALC. San Antonio's first public/private competitive effort was the G56-15 gearbox, an in-house workload. In order to become more competitive, an exhaustive review and adjustment of labor standards and processes were completed, deleting those that were no longer required and revising others to make them more efficient. In spite of these efforts, the contract for this workload was awarded to the low bidder, Standard Aero, Ltd, of Winnipeg, Canada. Projected savings from the award of this three-year contract are expected to be 3.6 million dollars. Several additional SA-ALC workloads are planned for competition in the future—the C-5 Speedline program and part of the Center's signal generator workload are being completed in FY92. We are also competing with the Navy for the T-56 engine workload. The other Air Logistics Centers are placing more of their workload in competition. Figure 4 shows the commands' candidates for FY92.

Competition is a double-edged sword. The centers stand to either gain workloads and grow—or lose those same workloads and shrink. Since changes in workload size has a significant impact on the rates charged to our customers, a steady decline in the workload base will drive our rate per man-hour up since there are fewer hours over which fixed costs can be allocated. Conversely, if the centers can increase the workload base, hourly rates are driven down. Future competitions, workload assignments, and ultimately the future of the ALCs will be impacted by how well we manage today. The goal must be to reduce costs and increase efficiency by taking a hard critical look at everything we do: our industrial processes, our labor and material standards, and our acquisition or divestiture of equipment and facilities.

There are other factors which impede the ability of military depots to compete with the private sector on equal footing or what has been termed the "level playing field." Military depots do not have the resource flexibility which exists in the private sector. The ability to rapidly hire or lay off workers to meet

changing workloads is hampered by civilian personnel guidelines. Another factor is wartime mission requirements. Depot facilities and equipment inventories are sized to meet the wartime surge. This larger than necessary infrastructure carries a significant overhead burden. The third and probably most restrictive constraint is lack of pricing flexibility. Depot prices are set two years in advance because of the budget process which provides customer funding. In normal times when workloads are stable, this does not represent an insurmountable problem. However, in today's restructuring environment, it is virtually impossible to accurately forecast future workload and thus to set accurate prices two years in advance. In order for military depots to compete, they need relief from these impediments.

## Conclusion

DOD depots are not immune from the economic fluctuations that affect the rest of the country. Managers throughout the DOD depot system must act and think like a business, and as such, we must concern ourselves with providing a quality product (defense readiness) to our customers at a competitive price. Being competitive in the business world is a strategy for survival. It is a team effort and a dramatic culture change. It is the Total Quality Management concept and much more. It means doing the best job each day in order to keep that job. Some changes to existing policy are also needed to allow the depots to compete on an equal footing with industry. Resource flexibility, set aside for wartime surge capacity, and pricing flexibility are needed so the "level playing field" is a reality.

As shown in Figure 3, three Air Force depots lost their first competitive challenge and two won. Managers and workers must apply the lessons learned from that first round of competition to other workloads to bring down the cost of doing business, and policymakers must provide relief from current policies which limit our ability to compete on an equal basis. In the long run, if we are unsuccessful in doing both, it could mean losing more than a workload.



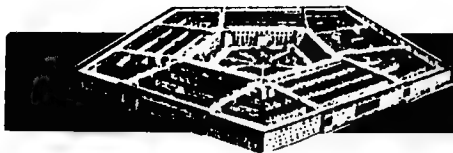
| AIR FORCE FY91 COMPETITION RESULTS             |        |                         |                                    |
|--|--------|-------------------------|------------------------------------|
| WORKLOAD                                       | CENTER | TOTAL CONTRACT<br>VALUE | AWARDS                             |
| TF33 ENGINE VANES<br>AND SHROUDS               | OC     | \$6.7M                  | 3 JUL 91<br>(PRIVATE<br>INDUSTRY)  |
| T56 ENGINE<br>GEARBOX                          | SA     | \$7.8M                  | 4 SEP 91<br>(PRIVATE<br>INDUSTRY)  |
| F-16 A/B/C/D<br>OPERATIONAL<br>FLIGHT PROGRAMS | OO     | \$1.5M                  | 25 SEP 91<br>(PRIVATE<br>INDUSTRY) |
| TRC-97A RADIO                                  | SM     | \$2.9M                  | 25 SEP 91<br>(SM-ALC)              |
| ARC-186 RADIO                                  | WR     | \$3.8M                  | 27 SEP 91<br>(WR-ALC)              |
|  | TOT    | \$22.7M                 |                                    |

Figure 3.

| AIR FORCE FY92 COMPETITION CANDIDATES |  |                       |
|---------------------------------------|--|-----------------------|
| ALC                                   | CANDIDATE                                | ANNUAL VALUE<br>(\$M) |
| OC-ALC                                | C-18 PDM                                 | 5                     |
|                                       | * CSD TRANSMISSIONS                      | 2                     |
| OO-ALC                                | F-16 APG-66 RADAR                        | 8                     |
|                                       | MISCELLANEOUS LANDING GEAR               | 17                    |
|                                       | MINUTEMAN III NUCLEAR HARDNESS           | 7                     |
|                                       | * MINUTEMAN III SOFTWARE                 | 7                     |
| SA-ALC                                | * TEST EQUIPMENT AND GENERATORS          | 1                     |
|                                       | * C-5 SPEEDLINE                          | 34                    |
| SM-ALC                                | SACRAMENTO ARMY DEPOT (SAAD)<br>WORKLOAD | <124>                 |
| WR-ALC                                | * C-141 CENTER WING BOX REPLACEMENT      | 35                    |
|                                       | TOTAL                                    | 116                   |
| * CURRENT ORGANIC WORKLOADS           |  |                       |

Figure 4.





## USAF LOGISTICS POLICY INSIGHT

### Interagency Acquisitions

"Interagency acquisitions" are purchases where a DOD component uses a Military Interdepartmental Purchase Request (MIPR) to fund a contract awarded by another agency, usually under the authority of the Economy Act. Recent audits of interagency acquisitions have uncovered a disturbing trend. The Air Force community as a whole does not understand how such purchases should be processed. The DOD Federal Acquisition Regulation Supplement (DFARS 217.5) requires the contracting officer to determine that an acquisition is in the best interests of the Government *prior* to ordering an item or service from another agency under the Economy Act. Unfortunately, this requirement has not been properly inserted in finance and other regulations that also describe the MIPR process. In spite of the requirement, most of the orders reviewed were placed using "normal" MIPR procedures, which bypassed contracting channels. Since contracting officers were not asked to review MIPRs, they did not know orders were being placed under the Economy Act and were not able to comply with the provisions of FAR 17.5 and its supplements. Upcoming regulatory changes will ensure that MIPRs are the only forms used to place orders under the Economy Act. Air Force contracting officers must sign a statement on the form that signifies their approval, prior to transmission to the other agency for purchase, unless the MIPR is for Milcon or a commodity assignment made in accordance with DFARS 208.7003. The customer must obtain all necessary approvals, provide data, and perform supporting analyses to the same extent as any "normal" Air Force acquisition and provide that information to the contracting officer with the MIPR for review. We have not been complying with regulations in this area, so let's pull together and clean up our act. (Ms Melissa D. Rider, SAF/AQCO, DSN 224-1634)

### Ammunition Procurement

In December 1991, the DOD Comptroller proposed that the Military Services' operating forces use Operations and Maintenance funds to procure training ammunition. War reserve ammunition would be procured through a direct appropriation to a new management fund, not the Services. This concept applied only to ammunition procured by the Army Single Manager for Conventional Ammunition. Because of Service objections, the Deputy Secretary of Defense directed a study of this concept and alternatives. The Task Force is completing its report and will present findings to the Deputy Secretary of Defense by 30 June 1992. (Lt Col Chandler, AF/LGMW, DSN 227-5760)

### Two-Level Maintenance Concept

At the request of Secretary Rice, the Air Force is studying the expansion of the two-level maintenance concept to currently fielded weapon systems. This study does not do away with one of the three current levels of maintenance. Rather, it seeks to redefine them and, if feasible, centralize some measure of intermediate level functions at Air Force Logistics Command (AFLC) depots. Using aircraft as the initial study group, each aircraft is being examined for its potential candidacy as a two-level maintenance weapon system. An aircraft which has two-level potential is reviewed as a complete weapon system;

by its commodities, such as engines and avionics; and by its operating location. MAJCOMs are playing a key role in the study, which will result in a proposal to the Secretary of the Air Force once the initiative's potential costs, savings, and impacts are fully examined. (Col Mark Roddy, Lt Col Joanne Rodefer, or Ms Vickie Thrower, AF/LGMM, DSN 227-3523)

### Mobility

What has happened with the Air Force mobility program? The program has been reevaluated in light of the Air Force restructure and the introduction of Total Quality Management principles such as streamlining, delaying, empowering, and removing roadblocks to improvement. The new structure of the Air Force provides people in the field with increased flexibility to improve their operations and respond quickly to change. AFR 28-4, *USAF Mobility Planning*, reflects these changes. The regulation now contains only the basic mobility policy of the Air Force. Procedures—the "how to" guidance—have been left to the major commands to develop and disseminate.

What does this hold for base level mobility programs? More responsive, flexible mobility procedures tailored to your specific mission. Every Air Force member involved in mobility, from the MAJCOM planner, to the installation mobility officer, to the mobility augmentee, should embrace this flexibility and new regulatory freedom and work to make their mobility program the best in the Air Force. (Maj Buck Jones, AF/LGXX, DSN 227-8129)

### Site Surveys for the 90s

So you can't afford to send a complete site survey team to your new wartime beddown location? This will probably become the norm rather than the exception throughout the 1990s. However, there are sources of information that may eliminate the need for a large, functionally representative survey team. A judicious amount of work beforehand can save time and money when a site survey is required.

The following sources should be used to gather information for the location one needs to visit: the Defense Mapping Agency's (DMA) Automated Airfield Information File (AAFIF), the APORTS standard reference file in JOPES, and the Air Force Civil Engineering Support Agency (AFCEA) Airfield Support Division at Tyndall AFB, Florida. The AAFIF provides classified and unclassified information on several thousand airfields worldwide. Requests can be by DSN or by letter to DMA in St Louis, Missouri. The APORTS information can be accessed by your MAJCOM planner through the Worldwide Military Command and Control System (WWMCCS). The AFCEA maintains airfield structure capacity and surface information gathered from these sources should allow individuals to limit the size of their site survey teams. Individuals should review the data with their entire team and decide what information needs to be updated or verified to meet their needs. Having done one's homework will greatly shorten the time required to conduct a site survey. Equally as important, individuals should always send new or updated information to the original sources so they can update their records. (Maj Buck Jones, AF/LGXX, DSN 227-8129)

# ***Investigation of the Adequacy of Current Air Force Regulations Guiding the Development and Procurement of Software User Manuals***

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## **Introduction**

During the acquisition of new weapon systems, the Air Force procures technical documentation deemed necessary to operate and support those systems. Most types of technical documentation procured have format and content requirements specified in military specifications and standards. The appropriate specifications and standards are included in the acquisition contract and thereby imposed upon the contractor for use in developing and delivering the documents.

The objective of this article is to determine the adequacy of current Air Force regulations for the development and acquisition of quality software manuals, and then to identify possible changes or additions to those regulations which could improve their utility.

## **Scope and Limitations**

For the purpose of this article, the phrase "software user manuals" will refer only to those manuals intended for use by Air Force personnel in operating or maintaining software. This article will examine all regulations, specifications, and standards applicable to the development and acquisition of Air Force software user manuals, in conjunction with new system acquisition; it will not review regulations for other DOD agencies. This assumes the computer software is embedded within and peculiar to the new system being acquired; therefore, this research also assumes the development of new manuals and will not cover the use of existing Commercial-Off-the-Shelf (COTS) manuals. The intent is to evaluate the adequacy of Air Force regulations for software user manual development and make recommendations based on that evaluation.

This literature review examines the extent of Air Force policy guiding the development of software user manuals, technical orders (TOs), and commercial computer manuals, through an analysis of current Air Force acquisition requirements and best commercial practices.

## **Discussion of the Literature**

### **Air Force Software Development Process**

Software procurement for the Air Force is required to follow a specific development cycle. The cycle consists of six sequential phases, most of which have an associated review or audit of contractor progress:

(1) **Software Requirements Analysis** - includes evaluating requirements for completeness, understandability, validity, and consistency and . . . is followed by a Software Specification Review (SSR). . . .

(2) **Preliminary Design Review** - includes top-level software design, critical lower-level software design, and . . . is followed by a Preliminary Design Review (PDR). . . .

(3) **Detailed Design** - involves refining the top-level software design to define all information necessary for coding. . . . This step is followed by a Critical Design Review (CDR). . . .

(4) **Coding and Unit Testing** - coding translates the detailed design into computer instructions and data definitions.

(5) **Computer Software Component (CSC) Integration and Testing** - consists of incrementally integrating units and components, and informally testing the result. . . . This integration is followed by a Test Readiness Review (TRR). . . .

(6) **Computer Software Configuration Item (CSCI) Testing** - consists of formal tests to verify that each function of the CSCI . . . satisfies the Software Requirements Specification . . . . This step is followed by a Functional Configuration Audit (FCA). . . . (1:25-26)

The six phases outlined are described in Air Force Regulation (AFR) 800-14, *Lifecycle Management of Computer Resources in Systems*. AFR 800-14 discusses the planning, development, acquisition, and support of computer resources in general terms. (1:1) More specific guidelines for software development can be found in Department of Defense Standard 2167A (DOD-STD-2167A), *Defense System Software Development*, which is referenced in AFR 800-14. (1:25) These regulations, and others, will be discussed later in relation to the requirements for software manual development.

## **Requirements for Software User Manuals vs Technical Orders**

### **Content/Format**

*Software Manual Development.* Although AFR 800-14 is supposed to provide general guidance for the development and support of computer resources, only two direct references to documentation exist. The first refers to development and can be found under the heading "Support Documentation":

Support documentation includes documents related to system management, design, operation, and maintenance. All software support documentation must be delivered in sufficient quality and detail to permit organic government support for the life of the system. (1:11)

The second reference concerns updating documentation:

All documentation (operator/user, maintenance, programmer, training, system/software specifications) will be updated to reflect software changes and be made available concurrent with distribution of updated CSCI products. (1:18)

More specific guidance can be found in DOD-STD-2167A, which is intended to provide specific means for establishing and maintaining quality in the development of Air Force software and its related documentation. (2:iii) This standard is important because it defines and limits the types of software manuals that

can be procured, and also delineates the specific requirements for the development of those manuals. (2:35)

When a new contract is established, a list is prepared of all the data items the government expects the contractor to deliver. This list is called a Contract Data Requirements List (CDRL). Each type of data item delivered has an associated Data Item Description (DID) which describes the basic format and content requirements for that delivery. DOD-STD-2167A discusses data items related to software development. (2:35) Four of the DIDs referenced in this standard define software manuals for Air Force users.

The four DIDs are listed below with short descriptions of their intended use:

(1) *Computer System Operator's Manual (CSOM)* - provides information and detailed procedures for initiating, operating, monitoring, and shutting down a computer system and for identifying/isolating a malfunctioning component in a computer system. A CSOM is developed for each computer system in which one or more CSCIs execute. (3:1)

(2) *Software User's Manual (SUM)* - provides user personnel with instructions sufficient to execute one or more related CSCIs. The SUM provides the steps for executing the software, the expected output, and the measures to be taken if error messages appear. The information required by this DID is directed to the functional user of the CSCI, as opposed to the operator of the computer system. (4:1)

(3) *Software Programmer's Manual (SPM)* - provides information needed by a programmer to understand the instruction set architecture of the specified host and target computers. The SPM provides information that may be used to interpret, check out, troubleshoot, or modify existing software on the host and target computers. (5:1)

(4) *Firmware Support Manual (SPM)* - provides information necessary to load software or data into firmware components of a system. It is equally applicable to read only memories (ROMs), programmable ROMs (PROMs), erasable PROMs (EPROMs), and other firmware devices, support software, support equipment, and procedures required to load software into firmware devices to verify the load process and to test the firmware device for proper functioning. (6:1)

As mentioned earlier, DIDs contain instructions to the contractor for the basic format and content requirements for the data to be delivered. Each of the manuals listed requires the same basic format: cover page, title page, a table of contents, scope, referenced documents list, manual specific procedures, notes, and finally appendices. (3; 4; 5; 6) The requirements for the manual specific procedures are broken down into sections within each DID. These DIDs, which average five pages each, are the guidance documents that provide specific content requirements for these manuals. According to Dan Ferens, Associate Professor of Systems Management at AFIT, Mil Standard 7935A, *DOD Automated Information Systems (AIS)*, 31 October 88, also provides limited guidance regarding the formats of software documentation. (7) However, there are some drawbacks to the usefulness of this Mil Standard. First, the purchaser has to remember to request specific documentation in the Statement of Work. Second, if the purchaser of the software fails to properly request the documentation format as specified in Mil Standard 7935A in the CDRL, the purchaser will not get the documentation. This Mil Standard is also only of limited use, as it only has the documentation formats for a few software-specific documents. The rest of the documents specified in 7935A apply to the entire information system. Those which do apply are "Software Unit Specifications," "Database Specifications," and "Maintenance Manual (Program)." (8)

One document was found that specifically addresses software documentation requirements (including those for user manuals). Although titled *An Air Force Guide to Software Documentation Requirements*, it is an Electronic Systems Division (ESD) document that was produced by the Mitre Corporation of Bedford, Massachusetts. (9) The guide discusses documentation used to monitor the software acquisition process as well as documentation intended for use by Air Force personnel, including the *Positional Handbook* and *Computer Users Manual*. For each type of document, the following subsections are addressed: Purpose, Uses, Applicability, Relationship to Other Documents, Assessing Adequacy, and Potential Problem Areas. This guide is by far the most detailed document in terms of specifications and procedures for software documentation. Apparently produced in response to an ESD contract for determining or consolidating Air Force requirements for software documentation development, the guide provides the following conclusions:

(1) There is no single source of guidance on software documentation . . . . This guidebook may serve as a consolidation of various Air Force sources, summarizing standard data items. . . .

(2) There is a lack of guidance on the requirements for, and usage of, documentation related to software and its acquisition.

(3) Another general observation is the general lack of detail in the DIDs. Coupled with the lack of guidance on software documentation requirements and the lack of definitions, this situation is unfortunate. (9:133-134)

*Technical Order Development.* AFR 8-2, *Air Force Technical Order System*, contains official policy on the Air Force TO system. (10:1) The TO-00-5 series of regulations further defines the TO system. TO-00-5-1 gives an overview of the whole Air Force TO system (11), TO-00-5-2 discusses the TO distribution system (12), and TO-00-5-3 provides acquisition procedures for TOs. (13) TO 00-5-1, *Air Force Technical Order System*, gives a description of the types of TOs in the Air Force. (11:2-1) There are five general categories: System and Equipment TOs, Time Compliance TOs, Methods and Procedures TOs, Index Type TOs, and Abbreviated TOs. (11:2-7) The actual requirements for the format and content of TOs can be found in numerous military standards. Some of these standards are general in nature; others are designed for a specific type of TO, or sections of TOs. A short list of standards is presented next to illustrate the comprehensive nature of the system regulating TO development:

|              |  |
|--------------|--|
| MIL-M-38784B | <i>General Style and Format Requirements</i>                 |
| MIL-M-7700C  | <i>Flight</i>  |
| MIL-C-38413B | <i>Air Refueling Procedures</i>                              |
| MIL-M-38807A | <i>Illustrated Parts Breakdown</i>                           |
| MIL-M-38797  | <i>Operation and Maintenance Instructions</i>                |
| MIL-M-26788C | <i>Operation and Maintenance Instructions (Vehicles)</i>     |
| MIL-C-9927A  | <i>Operational and Organizational Maintenance Checklists</i> |
| MIL-M-38793  | <i>Calibration Procedures</i>                                |
| MIL-M-38795B | <i>System Peculiar Corrosion Control</i><br>(14:29-32)       |

The development of any one TO will often require multiple standards. In addition to all the standards, general policy dictates that all newly developed TOs must be written to a ninth grade reading level. (14:5)

Software manuals are not mentioned under any of the TO category descriptions in TO 00-5-1 (11:2-1 - 2-6), and there are no standards dedicated to their development. (13)

## Quality Reviews

**Software Manuals.** Military Standard 1521B (MIL-STD-1521B), *Technical Reviews and Audits for Systems, Equipment, and Computer Software*, discusses the procedures to be followed during the reviews and audits of contractor progress which were briefly mentioned earlier. (15:19-123) This standard is organized by review and contains specific instructions on what material is to be presented for review, and, in some cases, the criteria for review. (15:19-123) The first time software manuals are specifically referenced is under the procedures section for the CDR which occurs toward the end of the system development cycle. (15:56) They are listed, along with multiple other items, under a heading which reads: "The contractor shall present the following for review by the contracting agency." (15:54) No criteria for evaluating the manuals are provided. Software manuals are not mentioned again until procedures for the Physical Configuration Audit (PCA) are discussed. (15:82) The instructions provided read:

As a minimum, the following actions shall be performed by the PCA team on each CSCI being audited: Check Software User's Manual(s), Software Programmer's Manual, Computer System Operator's Manual, Firmware Support Manual . . . for format completeness and conformance with applicable data of these manuals should be withheld until system testing to ensure that the procedural contents are correct. (15:82)

MIL-STD-1521B is not the only document which addresses software review or quality issues. Military Specification 52779A (MIL-S-52779A), *Software Quality Assurance Program Requirements*, mandates the establishment of a quality assurance program, and associated plan, to ensure new software complies with contract requirements. (16:1) None of the four software manuals discussed earlier are specifically mentioned. There is, however, a requirement to include in the quality assurance plan the procedures which will be used to assure software documentation complies with contractually required standards. (16:3) No recommendations are made as to what types of procedures are appropriate. It is apparently left to the discretion of the specific Air Force acquisition agency to determine the type and extent of procedures to be imposed on the contractor.

**Technical Orders.** TO 00-5-3, *Air Force Technical Manual Acquisition Procedures*, outlines all the steps required for TO development through each stage of program acquisition. The process involves a conference dedicated to TO development, multiple reviews to monitor contractor progress, a validation of the manuals by the contractor, and a verification process performed by the Air Force. (13) Specific procedures and review criteria are presented for each step of the process. In addition, there are a number of required planning documents (both Air Force and contractor developed), which outline the TO acquisition strategy.

Software manuals are not mentioned in the descriptions of this review cycle.

## Update/Control

**Software Manuals.** Air Force Technical Order 00-5-16, *US Air Force Computer Program Identification Numbering (CPIN) System Software Managers Manual*, describes the CPIN system and provides guidance on its use. The CPIN system is a new effort in the Air Force to treat computer programs as configuration items. Each CPCI will be assigned a CPIN number for distribution and tracking within the Air Force system. (17) Instructions for the control of software manuals are described as follows:

**USER DOCUMENTATION.** User documentation includes users manuals, test equipment manuals, and user maintenance manuals which are required by the user for operational use, checkout, installation, troubleshooting, and loading of the CPCI. User documentation will not be assigned a CPIN but will be assigned an appropriate technical order number and will be managed by the Technical Order System as applicable. User documentation will reference the applicable CPCI by the appropriate CPIN. (17:3-2)

**Technical Orders.** TOs are distributed and controlled according to the policies and procedures of TO 00-5-2, *Technical Order Distribution System*. (12) The Air Force TO distribution system is managed by Oklahoma City Air Logistics Center (OC-ALC) (10:2-1), the same base that manages the CPIN system discussed earlier. (17:1-1)

## Commercial Practices for Developing Software Manuals

"When the discussion turns to commercial software, one usually hears compliments for what the software does but criticisms for its documentation." (18:355) One of the reasons for this is that currently there is no accepted, documented standard for producing software user manuals. There is an organization designed to establish standards for all varieties of commercial practices, the American National Standards Institute (ANSI). A 1988 article from the *Journal of Technical Writing and Communication* states:

Such a documentation framework will result primarily from the efforts of the technical committees of the various standards organizations. For example, the ANSI Accredited Standards Technical Committee (X3K1) on Project Documentation is attempting to develop a standard for user documentation of any type of software product designed to be sold commercially. (18:357)

As of this writing, however, no such standard exists for developing software user manuals. This lack of specific guidance is often quoted as a serious problem in manual development (18:356), and many companies have begun producing their own self-imposed standards. (18; 19; 20)

## Conclusions

There are very few regulations guiding the development of Air Force software manuals. AFR 800-14 indirectly affects software manual development by providing general guidance on the development of the software to which it pertains. The regulation only provides two direct requirements for software documentation: that it be sufficiently detailed to permit organic support and that documentation is updated to reflect software changes as the change is released. (1)

DOD-STD-2167A addresses software manuals more directly by delineating the types of manuals that can be procured and listing the respective number of the DID which describes its purpose and format. (2) There are only four user type manuals listed in DOD-STD-2167A: *Computer System Operator's Manual*, *Software User's Manual*, *Software Programmer's Manual*, and the *Firmware Support Manual*. (2) There is a five-page DID associated with each manual. Each DID has the same basic format: cover page, title page, table of contents, scope, manual-specific procedures, and appendices; only the "manual-specific procedures" section differs from DID to DID. (3; 4; 5; 6)

In summary, the two regulations just discussed, AFR 800-14 and DOD-STD-2167A, along with the four DIDs and



DOD-STD-7935A, are the only documents guiding the content of software user manuals.

Requirements for quality reviews are even less stringent than those for content. MIL-STD-1521B references software user manuals twice. The first reference requires that the manuals be reviewed at the CDR for software deployment, but no evaluation criteria are provided for use in evaluating the manual. (15) Are the manuals to be checked against the software, or against the requirements of the DID? Who in the Air Force should be reviewing the manuals: users, program office personnel, or engineers? No specific guidance on these issues is provided. The second reference is a little more substantial, requiring review of the manuals during the PCA to ensure "format completeness and conference with applicable data item descriptions." (15:82)

In addition to MIL-STD-1521B, MIL-S-52779A is concerned with quality assurance of software and its related issues. (16) MIL-S-52779A mandates a quality assurance program and associated plan to ensure compliance of the delivered software products with the specified requirements of the contract. Although the four user manuals mentioned in DOD-STD-2167A are not specifically referenced, there is a requirement to include software documentation review procedures in the quality assurance plan prepared by the acquisition agency. (16:3) Once again, no procedures are provided, nor are there any recommendations as to where to locate appropriate procedures or review criteria. It is apparently up to the Air Force acquisition personnel to use the contract requirements to set their own procedures and corresponding stringency measures when reviewing these manuals.

The area of update and control for software manuals is no better. Although the software systems they support are well controlled, the requirements for the user manuals are very confusing. Software programs are now managed under Air Force Technical Order TO-00-5-16 which assigns identification numbers to the software for distribution and tracking. (17) The requirements for the user manuals are as follows:

USER DOCUMENTATION. User documentation . . . will not be assigned a CPIN but will be assigned an appropriate technical order number and will be managed by the Technical Order System as applicable. User documentation will reference the applicable CPCI by the appropriate CPIN. (17:3-2)

This statement seems to have been thrown in to compensate for the lack of direction for controlling software user manuals. It is apparent it was not an organized effort to improve the deficiencies, since the term "as applicable" has no reference as to what portions of the Technical Order System are, in fact, applicable. There are no specific references within the TO regulations to user manuals, nor are there any references within the software regulations to the use of TO regulations for software documentation.

The regulations guiding quality requirements, or update and control of software user manuals, are dispersed, unclear, and disorganized. This fact was recognized many years ago in a document produced for the Electronic Systems Division through a contract with Mitre Corporation of Massachusetts. The document, *An Air Force Guide to Software Documentation Requirements*, attempted to consolidate and clarify the exact requirements for procuring software user documentation. (9) Dated 1976, the document provided these conclusions (among others):

(1) There is no single source of guidance on software documentation . . . . This guidebook may serve as a

consolidation of various Air Force sources, summarizing standard data items.

(2) There is a lack of guidance on the requirements for, and usage of, documentation related to software and its acquisition.

(3) Another general observation is the general lack of detail in the DIDs. Coupled with the lack of guidance on software documentation requirements and the lack of definitions, this situation is unfortunate. (9:133-134)

Although its stated purpose was to act as a "guidebook" for consolidating software documentation requirements, no references to it were ever found in any of the regulations. Although no longer applicable because many of the regulations and all of the DIDs have been reviewed since its writing, the problems reported still exist today. Obviously, the conclusions provided went unheeded since all of the regulations discussed in this paper, which guide development of software manuals, were written after 1979, three years after the paper was produced.

In each of the areas reviewed—content, quality review, and control—the regulations guiding TO development are much more extensive and better organized than the regulations for software user manuals. The requirements for TO development are primarily consolidated in the TO-00-5 series of regulations, with individual military standards dedicated to almost every type of TO developed for the Air Force. There is a set quality review policy for all TOs, which requires reviews throughout development, as well as a validation (contractor checks TO against equipment) and verification (user testing for accuracy and readability). Specific review criteria and controls are established for each step of this review process. There is also a standard document for inclusion on all contracts requiring TO development; *Technical Manual Contract Requirements 86-01* aids the acquisition agency in ensuring all needed standards are included in the contract. (14) In addition, all TOs are required to be written to a ninth grade reading level.

Distribution and control of TOs are also well organized and well documented; TO-00-5-2 lays out all requirements and procedures for numbering, distributing, and updating TOs. The whole TO system is an antithesis of the scattered regulations guiding software user manual development. Unlike acquisition agencies within the Air Force, however, private companies have the ability to institute new procedures as they see fit, to improve the quality of their products. There is an almost limitless amount of literature available, documenting every aspect of computer manual development. Information on suggested content and format can be extremely detailed and is often specific to the type of manual being produced. Although the degree of quality reviews required varies from company to company, there is a growing trend in the literature supporting usability testing before publication. This usability testing is similar to the verification procedure required for Air Force TOs.

The area of updating and controlling software user manuals once they are published has received the least attention, but good source information is available.

The literature available on different procedures used by the commercial industry demonstrates that many companies are imposing much more detailed and stringent requirements on the development of their software user manuals than the Air Force currently imposes on the development of software user manuals for its own use.

In general, commercially produced software user manuals have been improving over the last decade. The recognition of technical writers as a respected profession, the increased competition within the computer industry, and an increased awareness and publication of prior deficiencies with user manuals

have all contributed to improvements in development practices. An added boon is that companies are sharing their experiences and publishing articles that detail development procedures. All the information needed to set up a quality software development effort is available, waiting to be consolidated.

The findings indicate that the requirements for Air Force software user manuals are dispersed, unclear, and nonspecific. The requirements for Air Force Technical Orders, on the other hand, are consolidated, well organized, and extremely detailed. Although the requirements for developing and producing software user manuals in the commercial industry can vary from company to company, there are many detailed, well-documented procedures available for producing quality manuals.

## Summary

The review presented clearly shows the need for improvements in the acquisition requirements for Air Force software manuals. The requirements for software user manuals desperately need consolidation! The option which first comes to mind is the idea of including software user manuals in the TO requirements system. The TO system is centralized, well organized, and highly specific, an excellent example of quality documentation standards. Including software manuals in this well-structured system could have distinct advantages. The requirements for TOs are primarily found in the TO-090-5 series of regulations which are well established and familiar to most acquisition organizations; including software manuals in this series of regulations would provide a localized, and well-recognized, source of standards. The requirements for the controlling and updating of software and its related documentation are already included in TO-00-5-16. In addition to localizing the requirements, there are many techniques used for developing TOs that could be applied to software user manuals. For example, the requirements for validating (contractor checks TO against system) and verifying (user testing for accuracy and readability) TOs would provide an excellent quality assurance program if applied to software user manual development. The requirement for standardizing the reading grade level of TOs could also be applied to software user manuals. Probably the greatest disadvantage, however, is the problem of adding to an already burdened system of regulations. Because the requirements for all the various types of TOs are so detailed, the regulations for their development and control are quite extensive. Adding software user manual requirements to these established standards runs two risks: the requirements for software manuals will become so dispersed throughout the regulations that the benefits of centralization will be lost and unique requirements for software manuals may be overlooked when fit into the TO regulation structure.

A better suggestion is to create a separate set of regulations which are specific for software manuals. The need for centralization would be fulfilled, and the resulting standards would potentially be much better organized and more easily referenced than a huge series of combined regulations. This would simplify the job of Air Force personnel responsible for contracting and administering the acquisition of these software user manuals, helping to eliminate mistakes or oversights and contributing to better quality products. This does not mean the valuable techniques and lessons presented in the TO system of regulations should be overlooked. There are many areas of dual applicability that could be included in the separate set of standards. The very fact of their separation would increase flexibility for modifying TO requirements if necessary, to meet

specific needs of software user manuals. The system for developing Air Force TOs has evolved and improved over many years, and should serve as a first template for organizing and developing a set of unique standards for software manual acquisition:

The quality of the documentation will only be as good as the intrinsic quality implied by the standard. An ambiguous or weak standard will result in documentation of dubious quality. (21:WE-52)

It is also important to consider the techniques currently being used by private industry for developing software manuals. The incentives for profit and customer satisfaction have led to great improvements in the quality of software documentation being produced in the commercial sector. The Air Force would do well to capitalize on those improvements by imposing requirements on their contractors which parallel or duplicate some of the better techniques currently in use in private industry. For example, the Air Force could require their contractors to hire trained technical writers, document their system of internal reviews, or present a schedule of development for successive drafts and their corresponding reviews. A publications plan prepared by the contractor and submitted to the Air Force for review could incorporate all of these issues; the standards for a Technical Manual Publications Plan would also be highly desirable. One of the enduring facts of life is that software is always modified, and it is important that documentation to support that software be updated accordingly.

Some additional sources related to the subject of this research, but not cited in the references, are listed at the end of this article.

It is clear that there is generous room for improvement in the system of regulations guiding Air Force software user manual acquisition. Two possible solutions are immediately apparent: combine the requirements for software user manuals with those for technical orders or develop a separate set of standards for the software user manuals. In examining some of the advantages and disadvantages of each solution, a recommendation for a separate set of regulations is the preferred choice.

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# CAREER AND PERSONNEL INFORMATION

## Logistics Professional Development

### Acquisition Professional Development

I'm sure you are asking yourself: "Why should I be concerned with the Acquisition Professional Development Program (APDP) when I'm a logistics officer?" Well, if you are unfamiliar with APDP, it is a program conceived to make sure acquisition professionals get the right education, training, and experience before they are senior enough to be assigned to the most important jobs in any part of the acquisition business—including logistics.

Remember all the media attention the Department of Defense got about the cost of military equipment? Well, in 1986 Congress passed the Goldwater-Nichols Act, in 1989 the Secretary of Defense provided the Defense Management Report (DMR) to the President, and in 1990 Congress passed the Defense Acquisition Workforce Improvement Act (DAWIA)—all of which pointed out the need to ensure all acquisition professionals receive the proper education, training, and experience before they are in a critical position. In a nutshell, DAWIA says critical acquisition positions are selected major authorizations and all lieutenant colonel and above (and civilian equivalent) authorizations where the individual is in an acquisition position—this includes jobs

like Director of Logistics (DOL), Deputy DOL, Integrated Logistics Support Manager (ILSM), Logistics Manager, etc.

To satisfy the requirements of DAWIA, DOD issued DODD 5000.52 and DODI 5000.52M to define critical acquisition positions and the requirements for individuals assigned to them. Air Force implementation is spelled out in AFR 40-110, *Civilian Career Program Management*, for civilians and AFR 36-27, *Acquisition Professional Development*, for military members (since their publication, certification requirements have been amended by SAF/AQ Action Memorandum, 27 Mar 92). All functions in the acquisition and support of acquisition programs are included: acquisition logistics, program management, communications-computer systems, contracting, science and engineering, test and evaluation manufacturing and production/ quality assurance, and financial management. Each functional area has three levels of certification—entry, intermediate, and senior. The certification requirements vary for each functional area, so you should refer to the regulations and memorandum for specific details.

The bottom line: if you aspire to become a key player in the acquisition business, by law, you must be certified! That's why acquisition professional development is important to you, the logistics officer.

(Captain Sanford, AFMPC/DPMRSA1, DSN 487-6405)

Continued from page 32

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## **History of US Military Logistics—Korean War**

*Captain Jack E. King, Jr., USAF*

### **Part II**

#### **Korean War**

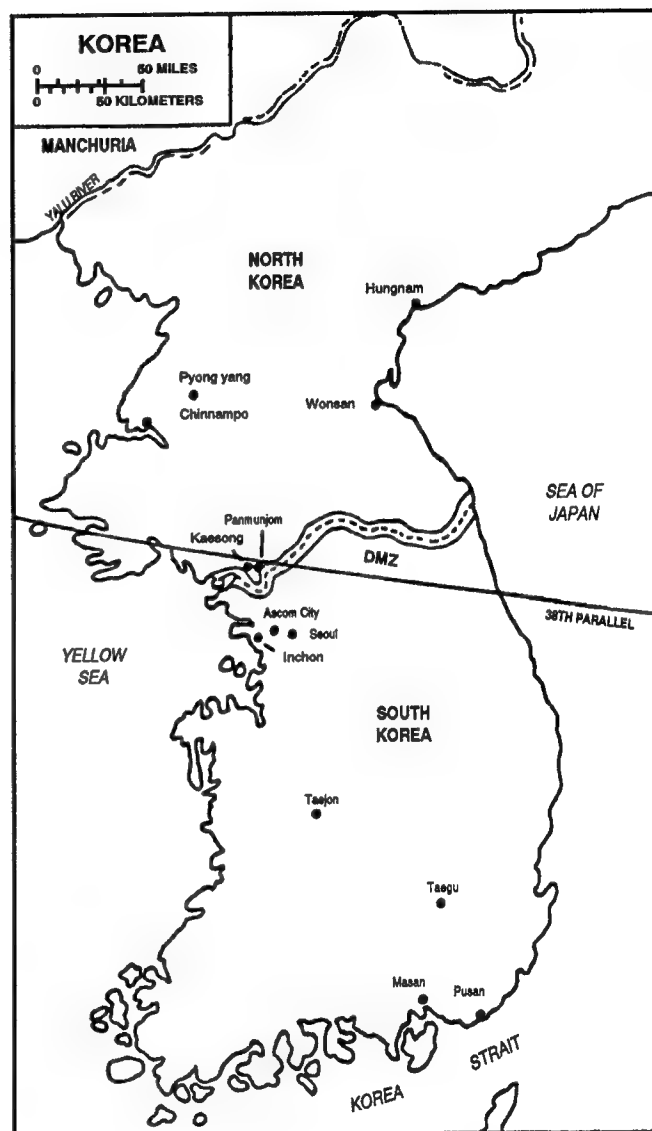
The Korean War was littered with problems similar to those experienced in World War II. Again, Americans were not ready for war, especially in the Pacific. The North Korean People's Army (NKPA) invasion of the Republic of Korea (ROK) on 25 June 1950 found the United States military in a deplorable condition with little conventional capability. (1:29) The newly established USAF had spent its limited budget on strategic nuclear systems and neglected the tactical forces which had been so decisive in World War II. The US had no logistics planning/logistics staff or deployable logistics force/system (such as prepositioned materiel) in the Pacific. Furthermore, the in-country infrastructure was virtually nonexistent. Manpower forces were hurriedly built up for immediate deployment, but adequate and proper in-theater equipment for their use was neglected.

**Surprises.** The end of World War II brought a massive and hasty demobilization. The Korean peninsula was controlled by the Japanese before US entry into World War II. During this war, the Korean people made it clear their choice was freedom and independence. The Korean request for such independence was officially recognized by the US, Great Britain, and China.

At the end of World War II, the Japanese south of the 38th parallel were to surrender to the US commander, and those north of the 38th parallel to the Soviet commander. No formal agreement existed between the US and the Soviet Union to divide Korea. It was merely a measure designed to facilitate the Japanese surrender. Over time, however, two separate countries developed. In May 1948, the Soviet Union refused to allow the North Koreans (those north of the 38th parallel) to participate in UN-encouraged free elections. In July 1948, a constitution was drawn up for the Republic of Korea (South Korea) and Dr Syngman Rhee was elected the Republic's first president. (10:173)

With the emergence of the Korean government, a US military government was no longer required. In 1948, the Soviet Union began to "press" for identification papers to cross an otherwise "free" border. Furthermore, the Soviet Union continued to "educate" the North Koreans in the communist way of life, culminating in the socialist-oriented People's Democratic Republic of Korea. As early as August 1949, the United Nations (UN) attempted to recognize the Republic as the legitimate government of Korea and as a free, independent country and member of the UN. However, both Korea's membership in the UN and its official recognition as a free and independent nation were vetoed by the Soviet Union.

While the South Koreans received US defensive equipment, the North Koreans developed a large, well-equipped, well-trained military force capable of both offensive and defensive operations. It was not long before North Korea began to harass



Map of Korea. (4:2)

its southern neighbor. Roads were blocked, electricity from the industrialized North was cut off from the predominantly agricultural-based South, villages were raided, and incidents involving armed firing across the border were fabricated. Propaganda abounded in North Korea. The South Koreans believed the North Koreans enjoyed high employment, bountiful food, and high living standards while those in South Korea needlessly suffered the anguish their life had to offer. In fact, the North Koreans did "enjoy" very high employment as they were "forced" to work.



On 25 June 1950, North Korea, instead of harassing with platoon-sized forces, actually invaded South Korea. The Soviet Union was convinced any reaction to the invasion would culminate in "a slap across the wrist," much the same as applied to pre-World War II invasions by Italy, Germany, and Japan. The last thing expected was a United Nations Security Council resolution condemning the invasion coupled with committed US and allied involvement. In a matter of days, North Korea had swept over much of South Korea. Within a month, the NKPA drove the UN forces to a small perimeter around the port of Pusan. Despite the poor condition of those forces, airpower seemingly made the difference preventing disaster and complete defeat during the initial NKPA invasion. Lieutenant General Walton Walker, Commander of the Eighth US Army in Korea at the onset of the war, stated:

If it had not been for the air support we received from the Fifth Air Force, we would not have been able to stay in Korea. (11:384-395)

While the USAF was a major factor in helping to ensure South Korea's independence, numerous errors were committed by US forces resulting, at times, in the ineffective application of military capability.

*Logistics Planning.* The US entry into the Korean War on 26 June 1950 was very similar to its entry into World War II. As for operational logistics planning—how to get supplies and equipment, once produced, from the US to the troops in the theater—the failure of war planners to foresee the possibility of a North Korean invasion of South Korea meant there was no war plan to form a basis for logistical planners. Hence, no logistics planning was in place for the Pacific. Furthermore, no logistics staff existed in the Pacific Command. Nor was a ready, deployable logistics force or system available. Again, the US was not ready for war. In an attempt to assist a friend in need, manpower was immediately deployed, neglecting the requirement for the simultaneous arrival of equipment. What awaited arriving troops was, at best, a poor in-country infrastructure. South Korea was an agriculturally-oriented nation—no requirement existed for an extensive infrastructure.

Neither the Far East Command nor the Department of the Army "appeared to have any prepared plan for support of military operations in Korea." (5:22) An off-the-cuff decision to go into Korea was supported by a spontaneous UN recommendation "without reference to logistical plans and analysis." (5:22) Detailed planning was immediately initiated, arguably a little late under the circumstances. Although it may be impractical, if not totally impossible, to plan for every possible contingency, there is perhaps some "advantage to be won in the very process of planning even if the plans themselves have to be 'thrown out the window' when the emergency comes." (5:22)

The US was fortunate in that Japan had rapidly rebuilt its societal and industrial framework in the five years since World War II. Facilities, such as shipyards, drydocks, and air bases, had been rebuilt. Productivity was on the rise. The devotion of an inexhaustive labor source was astounding. Spare parts and equipment, including World War II landing ships, were made available to the US. Japan's hospitals cared for sick and wounded US soldiers. Japan's neighbor, Taiwan, also assisted with its industrial strength. The US was also fortunate in that the North Koreans possessed no credible naval forces, making it easier for the US to use Japan's assets more freely.

*Infrastructure.* In agriculturally-oriented South Korea, an in-country infrastructure was virtually nonexistent. There simply

was no requirement for such an elaborate system. Had one existed, it may have proven invaluable the first 12-18 months. Fluidity and mobility became the name of the game. In the first year, especially, the war was marked with lots of movement. As a result, logistics support had to become mobile. Combat logistics became a reality. Without logistics support in the immediate vicinity of combat, battles could not be fought and won. It was impractical, indeed impossible, to create, under such circumstances, large depots. Combat support, by necessity, had to be delivered to the front lines, wherever they might be from day to day.



The giant C-119 "Packet" planes were capable of dropping practically any kind of weapon to ground forces. This "Packet" of the Far East Air Forces is shown releasing a 5,000 pound 105-mm howitzer. The artillery piece is lowered by means of three 100-foot parachutes.

As the war continued, more and more emphasis was given to support personnel in logistics (finance, supply, transportation, grave registration). Soon, the number of support personnel outnumbered combat forces by a ratio of 5 to 3. (9) In turn, another logistics problem was created—how to logistically support logistics forces. Here, initiative (make-do measures) played a key role. Due to the mobility of war, improvisation depended on imagination. Imagination, in turn, depended on experience. A lot of "left-over" World War II experience and knowledge were available. It did not take long, for example, until helicopters became indispensable for transporting supplies and evacuating wounded across treacherous mountain country and otherwise inaccessible battle positions.

As for Korea's accessibility, only one major railway and one major highway existed prior to the invasion. The industrial capability was concentrated north of the 38th parallel. Ports, equipped for no more than one or two ships at a time, were minimally adequate. No communications system existed. Transportation of supplies and equipment to most of the units, even in the best of circumstances, was often relegated in small

doses to Korea's only indigenous source of support—the backs of human laborers.

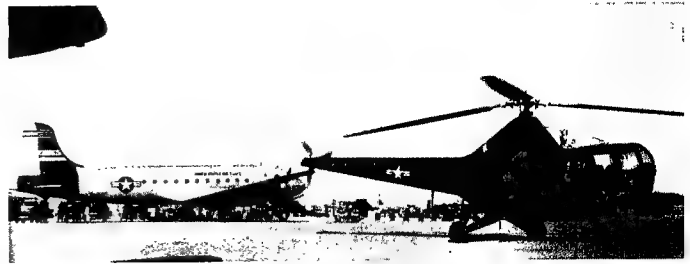
**Manpower and Equipment.** Troop strength and readiness were two large problems that faced America's military forces when the surprise invasion of South Korea demanded action in the summer of 1950. US Army worldwide assigned strength, as of 26 June 1950, was 630,201 (360,063 in the CONUS). (4:25) Of the remainder, 108,550 troops were in MacArthur's Far East Command (nearly 10,000 below authorized strength) and 80,018 in Europe. (4:25) The rest were scattered about the globe. Unsurprisingly, General MacArthur's Far East Command was "in the worst condition that it had been in since the end of World War II." (7:164-165) As if that were not enough, many of the units were comprised largely of young, inexperienced soldiers, armed, if at all, with police-type weapons. (4:25) As conditions worsened on the battlefield, General MacArthur quickly scrapped his first estimates for two divisions, instead asking for a field army of four divisions, one airborne regimental combat team, one armored group of three medium tank battalions, and numerous artillery and support units. (4:26)

Logisticians had their problems also. The total tonnage of equipment and supplies shipped in support of the Korean War totalled 31.5 million tons. (5:18) Supplies on-hand at the beginning of the war were sufficient only to sustain troops in peacetime activities for 60 days. (4:26) Virtually no supplies were in the pipeline. Equipment and supplies from deactivated units, for the most part, were unserviceable. Depot stock levels fared no better. In late June 1950, depot stock levels approached 90 days for most supplies. Critical Army supply and equipment needs, however, were met early in the war—World War II surplus stocks "saved the day." (6:46)

**Lessons Learned.** The US, as before in World War II, prepared no operations/logistics planning for a war in the Pacific. Subsequently, inadequate airlift was the norm—the nearest point of embarkation was Japan. Fortunately for the US, a great deal of World War II surplus could be accessed throughout the Pacific. What was not readily available was shipped in from the CONUS and other allied nations. In fact, much reliance was afforded shipping. A reasonable Merchant Marine force was in existence as were many of the Liberty/Victory ships of World War II; however, the pipeline from the US to Korea was more than 5,000 miles.

Needless to say, lead times were often excessive. To accentuate the problem, no ready industrial base existed in the US. More political attention was given to the economy, in particular the gross national product (GNP), than on US involvement in the Korean War. Political emphasis was also leaning heavily in favor of European changes. Much attention was given to the Soviet Union and NATO's role in collective security. For these and other reasons, Congress did not declare war; nor was a national emergency declared, thereby effectively denying the strong-willed drive typical of previous military engagements.

The Korean War also demonstrated problems encountered by the improper organization of a joint command. The Far East Command operated for more than two years without a true joint headquarters. The command structure in place at the time was overcentralized in Tokyo, greatly hindering the coordination of joint forces and communication between forces. (2:389) Although the war demonstrated the importance of air superiority in a theater of operations, a typical failure caused by this ineffective command structure was in air targeting. Instead of air targeting being performed by the Far East Air Force (FEAF), the air component command, MacArthur's Far East Command



A tiny H-5 helicopter of the Third Air Rescue Squadron revs its main and tail rotors as it prepares for a rescue mission on which it will pick up one or possibly two frontline soldiers. Meantime a giant FEAF C-54 "Skymaster" of the 315th Air Division (Combat Cargo) in the background easily takes aboard half-a-hundred UN soldiers, complete with their full battle rigs. It will fly them to a more advanced air base where they will be taken in trucks to the front.



A giant C-54 "Skymaster" of the 374th Troop Carrier Wing stands alone in the midst of a sea of high priority supplies awaiting airlift to advanced Korean air bases.

General Headquarters (GHQ), formed the GHQ Target Group and tried to direct air operations from Tokyo. (3:45) The Target Group did a poor job of targeting due primarily to the lack of air targeting expertise in its Army-dominated membership. (8:54)

Another problem caused by the lack of a true joint HQ staff was that Navy and Marine air resources were not effectively integrated with the overall effort. (3:49) Although the importance of integrating air interdiction into the theater campaign and the need to combine interdiction with ground force maneuvers were eventually demonstrated, the overall effect of a poor command structure was that the fully integrated use of joint forces was never realized against the enemy. Official USAF history notes:

The Korean War was the first conflict to test the unified military forces of the United States. Although the US Joint Chiefs of Staff had directed the Far East Command to provide itself with a joint command staff adequate to ensure that the joint commander was fully cognizant of the capabilities, limitations, and most effective utilization of all the forces under his command, the United Nations Command/Far East Command operated for the first two and one-half years of the Korean War without a joint headquarters. Practically all of the interservice problems which arose during the Korean War could be traced to misunderstandings which, in all likelihood, would never have arisen from the deliberations of a joint staff. In the absence of the joint headquarters staff, the United Nations airpower was seldom effectively applied against hostile target systems in Korea. (3:693)

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*Captain Jack E. King, Jr., wrote this article while a graduate student at AFIT. He is presently assigned to Warner-Robins Air Logistics Center, Robins AFB, Georgia.*



## *Most Significant Article Award*

The Editorial Advisory Board has selected "Capturing Logistics Data" by Major Stephen J. Hagel, USAF, as the most significant article in the Winter 1992 issue of the *Air Force Journal of Logistics*.

## *Most Significant Article Award of 1991*

The Editorial Advisory Board has selected "Documentary on Desert Shield/Storm Supply Support" by Colonel John H. Gunselman, Jr., USAF, as the most significant article published in the *Air Force Journal of Logistics* during 1991.



The Winter 1991 issue featured abstracts of award-winning theses from the 1991 September graduating class of the AFIT School of Systems and Logistics. The respective faculty advisors deemed the outstanding research reflected in the additional abstracts presented here should also be shared with the Air Force and DOD logistics community. A copy of each thesis is available through DTIC.

**Title:** *Inaccurate Data Entry into the Air Force Maintenance Data Collection System*  
**Author:** Capt Jon R. Determan

This study investigated the data collection environment under the Core Automated Maintenance System (CAMS), a computerized information system used in the Air Force's aircraft maintenance complexes to aid maintenance managers in maintaining aircraft. The research used a survey to measure the perception of maintenance personnel regarding the nature, extent, and causes of data inaccuracies occurring in the CAMS data collection environment. The nature was differentiated as being either intentional or accidental, with 10% of the total errors occurring being attributed to intentional causes while 90% were attributed to accidental causes. The evidence presented in this research supports characterizing the nature of errors as intentional or accidental. Additionally, the evidence suggests that the research's initial attempt to categorize the causes of data errors occurring was successful. Finally, rank was a significant factor in differentiating among the perceptions of maintenance personnel of data accuracy.

**Title:** *An Analysis of the Information Requirements of CONUS Based Deputy Commanders for Maintenance*  
**Author:** Capt Daniel J. Green

The purpose of this research was to identify the information requirements of Air Force Deputy Commanders for Maintenance (DCMs). The three basic objectives of the research were to identify the critical success factors (CSFs) the DCMs monitor on a continuous basis, identify similarities in those requirements for all DCMs and across major commands, and determine if the application of information system technology would enhance their decision making. Surveys were sent to all CONUS based DCMs. The study found that there were nine CSFs used by a majority of all the respondents. In addition, nine command-specific CSFs were identified. It was determined that executive information system technology would most benefit their decision-making processes.

**Title:** *Comparative Evaluation of Monocular Display Devices Relative to Portable Computers for Display of Aircraft Maintenance Technical Data*  
**Author:** Barbara L. Masquelier

The purpose of this thesis was to evaluate the use of head-mounted monocular display devices (HMDD) for presenting technical orders to aircraft technicians in the maintenance shop environment. Studies to date have verified the superiority of

computer-presented technical orders when compared to current paper-based systems; this research investigated the effectiveness of these computer-based systems when technicians used an HMDD. Results were compared to those of technicians using an electroluminescent display. A repeated measures experiment was performed in a maintenance shop at the 4950th Test Wing, Wright-Patterson AFB, Ohio. Results indicated no statistically significant difference in the performance of maintenance technicians when using either of the two display systems in a controlled environment. The major conclusion was that the HMDD may be a viable contender for use in the flight-line maintenance environment. The primary recommendation was that further studies be performed which compare the use of the HMDD to flat panel display systems in an operational flight-line environment.

**Title:** *A Conceptual Model and Analysis of the Air Force Depot Supply and Maintenance Pipeline for Repairable Assets*  
**Authors:** Capt Bradley M. Kettner, USAF, and  
Capt William M. Wheatley, USA

This study develops a conceptual model of the Air Force depot-level repairable pipeline. Products developed from this study include flow charts and process descriptions for each individual segment of the depot-level repairable pipeline. The study also provides the results of the statistical analyses and goodness-of-fit tests on each segment of the pipeline. The model is divided into six major segments: base processing, repairable intransit, supply to maintenance, shop flow, serviceable turn-in, and order and ship time with three related elements, programmed depot maintenance, new serviceable components, and new end-items, included. The model along with the process descriptions, flow charts, statistical analyses, and probability distributions provide a thorough description and basic documentation of the depot-level repairable pipeline, thereby presenting an initial step in improving the pipeline and providing a guide for future research.

**Title:** *Effective Design of Strategic Control Systems for Air Force Information Management: A Program Evaluation*  
**Author:** Capt B. Bruce Cowser

Strategic planning and implementation and strategic controls offer organizations powerful and essential tools for proactive management. This study was conducted in order to evaluate strategic controls in Air Force Information Management (IM) and to recommend ways to improve them. A model for strategic controls was developed from the literature to serve as a standard for evaluating current programs. Interviews were conducted at three major commands to gather data on the current state of strategic controls. A qualitative analysis methodology was employed. Recommendations include the following: all organizational levels should be setting strategic objectives and establishing measurement standards based on factors that affect strategic outcomes; planners should analyze and record the



premises upon which strategic objectives are based and review them periodically—especially before taking action—to ensure their continued validity; IM should create a clear strategic vision which focuses on defining the organization's intended relationship with every stakeholder; and, every management initiative should be thoroughly integrated with the strategy and aligned with the vision.

Title: *Leadership Self-Efficacy: Measuring the Effects of Leadership Training at Squadron Officer School*  
Author: Capt Gilbert W. Jennings

This study used a measure of change in perceived self-efficacy as a method for evaluating the effectiveness of the leadership training conducted at the Air Force's Squadron Officer School (SOS), Maxwell AFB, Alabama. A self-assessment survey was developed to measure the change in perceived self-efficacy related to leadership behaviors of the students when they compare themselves to their idea of an ideal leader/manager. Dr. Gary A. Yukl's (1989) taxonomy of leadership skills was used as the leadership model in the development of the survey instrument. A statistical analysis was done to determine which of Yukl's skills showed the greatest amount of change as a result of attending SOS. Results indicate SOS had a positive impact on students in eight of eleven skills defined by Yukl's taxonomy. When the eleven skills were condensed into four broad categories described by Yukl, there was significant improvement in three: giving and seeking information, making decisions, and influencing people. Building relationships did not show a statistically significant improvement. Regrouping the skills to coincide with Henry Mintzberg's (1980) ten managerial roles,

the leader role showed significant improvement while the managerial roles exhibited an insignificant change.

Title: *The Development of an Instrument to Measure the Theoretical Parameters of Charisma Within Organizations*  
Author: Capt Daniel K. Hicks

This study set out to identify the parameters in the existing leadership theories that lead to the attribution of charisma in organizational leaders. Once these parameters were identified, the goal was to develop and validate the means to measure the parameters. A review of the literature uncovered eight theories that describe the operation of charisma within organizations. From these eight theories, 37 distinct behaviors or qualities were extracted, each of which was theorized to lead to the attribution of charisma either singly or in combination with other parameters. The 37 parameters were operationally defined through the use of semantic differentials whose rigor is well-documented. The reliabilities achieved (as measured by Cronbach's alpha) were acceptable in all cases. The scales for measuring the 37 parameters and 2 anchoring scales became the input for factor analysis using the rotated principal factors method and Pearson product moment coefficient of correlation. The results of this analysis showed that the 37 original parameters collapse into 11 factors. Further use of Cronbach's alpha showed that these factors can be tested with high reliability just as the 37 original ones can be. The scales were placed into instruments to aid future studies with four instruments currently available for use in research and in training or consultation.

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### SOLE Logistics Symposium

The 27th Annual Society of Logistics Engineers (SOLE) International Conference and Technical Exposition will be held August 4 - 6, 1992, at The Westin Hotel and the Indianapolis Convention Center, Indianapolis, Indiana. The theme of the conference is "Global Logistics on the Fast Track." The program will address technical issues and requirements supporting a "global economy" from a logistical perspective. Technical panels will discuss Technology, Operations, Electronic Commerce, Computer-Aided Acquisition and Logistics Support (CALS), Product Support, Electronic Data Interchange, European Community '92, Management, Distribution, and other interesting topics. For more information, call Sue Glucksman at SOLE Headquarters (301) 459-8446 or 1-800-695-7653.

# CANDID VOICES

## Transitions

*SMSgt Robert S. Von Wolffradt, USAF*

This is without a doubt one of the most challenging times for everyone in the Air Force. Not because of war or threats to national security, but because of the profound effects of recent changes to the personal security of our military people. The time ahead will require critical decisions for everyone affected by the current round of cutbacks. We need to understand these cutbacks and their impact, and find out what we can do about them.

Understanding is sometimes easier when we can compare similar actions to our own. Cutbacks in the civilian industry are not new. Recently major US companies and organizations once thought of as the most secure in the world have had to face the reality of a changing world.

### Big Industry Cuts in 1992

Sears Roebuck is cutting 6,900 clerical jobs. (3) During Thanksgiving (1991), IBM announced they would cut over 20,000 workers. (4:115) Defense industries are also affected. McDonnell Douglas Corporation plans to fire about 7,700 employees. Boeing Company expects to lose about 2,500 jobs and probably many more with the decrease in production of the B-2 Stealth bomber. General Electric Aerospace reported plans to cut employment by 20% at one plant. Additionally, Xerox disclosed plans for reducing its work force by 2,500 by mid-1992. TRW Inc. announced impending job cuts of 2,500 workers. (5) "There was a time when someone would come to the front door of AT&T and see an invisible sign that said, 'AT&T: A JOB FOR LIFE.' That's over." (1:50)

### Impacts of Transitions

The Air Force reductions are as real as these civilian cuts but predicated on a lot of players and schools-of-thought versus corporate profit margins or bottom lines. Congressional pressure to reduce defense spending because of world situation changes provides additional frustration. House and Senate members concerned because of the economic conditions see defense spending as a source to increase spending on social programs. Politics in an election year may seem to be short-sighted toward immediate return fixes. Senior Air Force leaders are implementing a massive reorganization to reconfigure the Air Force. People from the Pentagon through the major commands and wings are trying to find better and cheaper ways to conduct business. This all leads to one conclusion: we get smaller, we spend less, and we consolidate missions.

The impact is not limited to those who must move on or make difficult decisions, but to all of us. Criteria for reductions in personnel have been released; we know pretty much who is affected right now and we also acknowledge that there really are no "sacred cows." So, however things work out for those directly affected now, may impact us later.

During Desert Shield/Storm, there were many who did not go to the Persian Gulf, yet they felt the impact just as much as those

who did. Now we are concerned when we see our coworkers and friends being forced out of the service and we are allowed to stay. This concern has a lot to do with the atmosphere of the Air Force—a much more family oriented and closely related team than other organizations. For those who stay, we must do whatever we can to help those leaving—many of them face a new and frightening prospect.

A Senior Colonel in one organization, during a staff meeting, said it well:

Relax, take things a little slower. Try to remain flexible and understand that our folks may feel bad. Some feel that the government has let them down. They were told that if they did a good job—not outstanding—they could stay as long as they like. They feel they have kept their part of the contract, but the government did not. Requiring optimum performance from someone who feels singled out and less than worthy will hurt all of us. Don't relax standards that must be maintained, but try and make a distinction between what is really important and required and what we can collectively handle.

These words took a while to sink in, but they are right on target. People who are fired, terminated, released, or simply let go, not because they asked for it, are going to respond. This response may manifest itself in many ways; some of the more common are a lack of self-worth or esteem, a conflict with what they want to do and what they can do, a reevaluation of goals and ambitions in the face of stark reality, a drop in productivity, and many, many more. These all can translate into a change in morale and atmosphere. Suddenly, security and a sense of belonging are threatened. Examples are everywhere:

A manager who was laid off from one job and subsequently lost another job at 46, with a child in college, is job hunting again and paying \$400 a month for family health benefits. This kind of life creates a tremendous strain on families. (7:97)

It's demoralizing for people who feel it's just a matter of time, no matter how well they perform. (7:97)

They will need help to change or move. The uncertainty caused by inaction can often be more painful than the eventual decision, however severe it is. Do not try to soften the blow by long explanations. Give people options and time to consider them. (6:183)

We must stay attuned to what we are putting these folks through and remain sympathetic. Employees who were once punctual, sharp-dressed, and very professional are now apt to be late, not have shoes spit-shined, and speak without filters. The effect on the people involved is one part of the equation; the other is their circle of family and friends. Family members are now faced with their own feelings of hurt, anguish, and turmoil, as well as the service member's pain.

### Making Transitions Easier

#### Supervisors

(1) Be a real supervisor; talk to your folks every day. A 15-minute conversation costs you less than 1% of a 24-hour day.

Let them know to whom they can talk and refer them to that person!

(2) Give them the time they need to adequately think through any life decisions.

(3) Help with interviews and job application skills.

(4) Look at flexitime alternatives so they have the opportunity to talk to outside agencies.

(5) Go over their situation with your boss, not for oversight, but to make sure all alternatives are explored.

(6) Ensure training records are up-to-date and reflect all the things employees do.

(7) Prepare draft letters of reference and let them look at them.

(8) Make sure awards and decorations are more timely than ever.

### Organizations

(1) Coordinate with the base agencies and invite speakers to come to your organization.

(2) Give customer service a new meaning for those caught in the first round of cuts. Offer "drop everything else" service to them.

(3) Show them exactly where they stack up in the organization's priorities and values.

(4) Acquire a computer program that generates the Standard Form 171 for government jobs to specifically help those who will transition. In addition, look at computer software that generates resumes.

(5) Acquire a FAX machine to handle questions from field units and an answering machine for 24-hour help.

(6) Come up with an idea and implement it. If it works—great. If not—try something else. There is little time to "adequately staff" proposals!

### Individuals

(1) Identify what is really important in your life. Review values, goals, and career objectives.

(2) Talk to everybody; seek out the most insignificant source of advice. Use what you want and discard the rest.

(3) Talk to family and friends; this includes co-workers and supervisors. Let them know how they can help in this situation.

(4) Acknowledge a "conflicting feeling" about the Air Force, mission, and other closely held convictions. "The people who

are creative and go out and do something will be all right. The bitter ones are going to have a hard time." (1:52)

(5) Prepare yourself. "Your ability to succeed in selling yourself doesn't depend on what happened in your past, but on how you see your future. Convince yourself that you will be successful and you'll convince others as well." (2:20)

(6) Review finances. Look at any long-term commitments with a reserved approach now. Consolidate expenditures and conserve resources; review your budget plan in light of perceived changes in income. Use any current benefits that are available to you, including health care, dental care, Morale, Welfare, and Recreation (MWR) car repairs, counseling services, and Base Exchange (BX) privileges.

(7) Prepare for interviews. Update training records, education, and experience documentation. Ask for letters of referral, recommendations, and references. Update phone and address contacts; use the locator service.

There are many more things we all need to do for each other. We are all part of one family, *the Air Force*. When I hear Air Force senior leaders telling senior NCOs with less than 20 years that they would rather put them out than retire someone already past 20, I have to sincerely question their priorities. What exactly are we telling each other? We need to paint the canvas with the right vision; either people are in the front or they are not. We need to collectively concentrate on those "important" things and shift the emphasis away from routine matters. As leaders and supervisors we need to be more concerned with our people than what kind of undershirt or new uniform is acceptable. Let's all examine our priorities today—we never know who will be next!

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